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THE UNIVERSITY OF ALBERTA

REGIONAL DEVELOPMENT IN THE NORTH: THE GREENLAND EXAMPLE

by

PETER GUDMUNDUR OSRUNN ©

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF DOCTOR OF PHILOSOPHY

in

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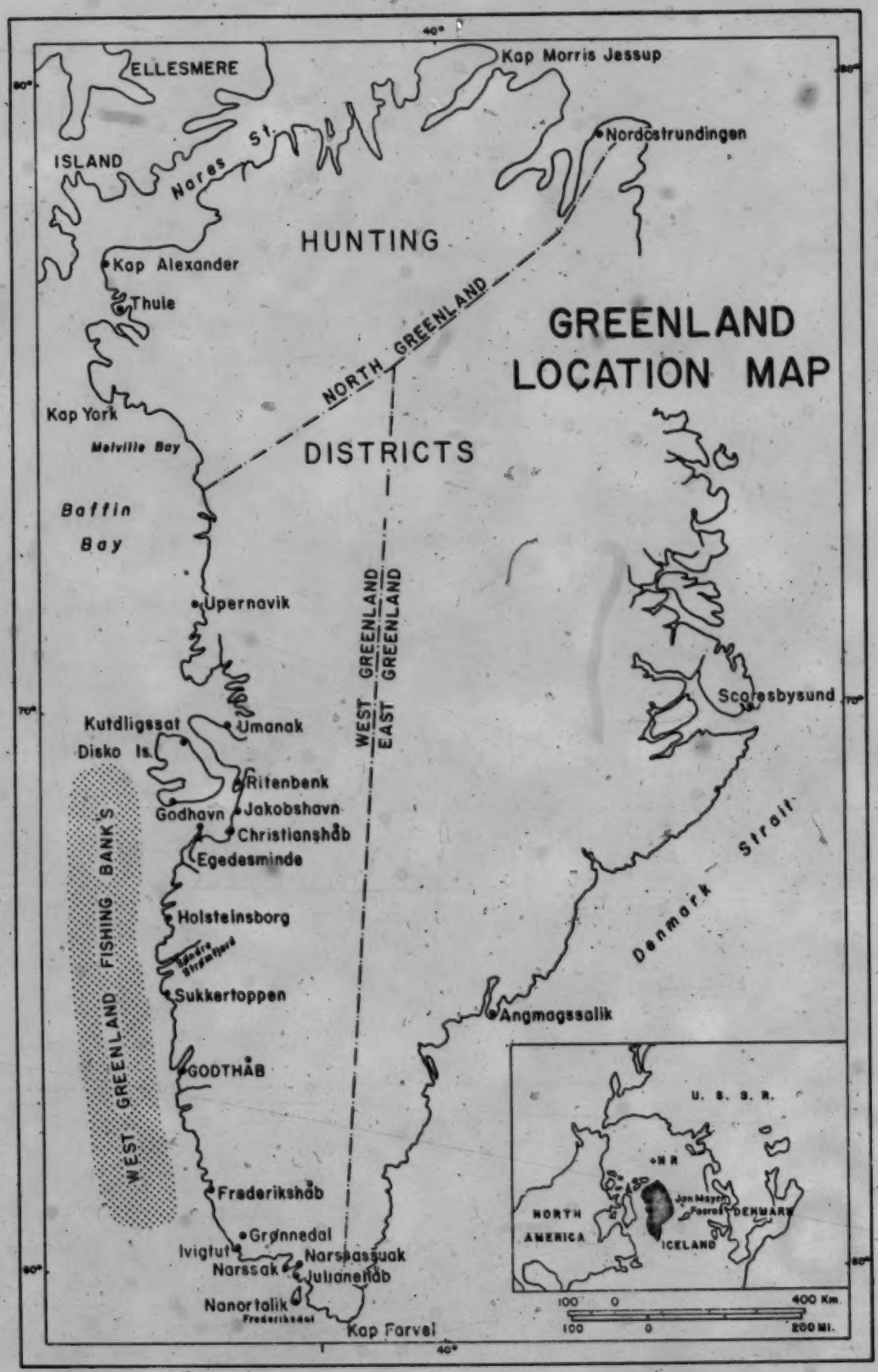
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Ritenbank
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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled *Regional Development in the North: The Greenland Example*

submitted by *Peter Gudmundur Osrunn*

in partial fulfilment of the requirements for the dgree of Doctor of Philosophy in Geography.

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ABSTRACT

An important device for stimulating regional development is the growth pole or growth centre. It is widely recognized that benefits from implementing key growth industries can stimulate growth in other economic sectors. Conceptual extension of growth centre philosophy includes growth points.

This thesis attempted to contribute to a theory of growth points by examining four growth points in Greenland. The variables examined were the types of investment, the effect of housing on labour force concentration, and the geography of government policies regarding raw material purchases.

Investment in direct productive facilities, economic, and social infrastructure were generally concentrated in towns. Housing programs were found to attract a labour force and affected settlements to a greater extent than villages. Analysis of a new raw materials purchasing policy revealed that it hastened relocation of fishermen or fish landings to growth points.

Sectoral employment in four growth points was found to have increased. Not all sectors increased at the regional rate. Heavy government transfer payments explain much of the increase in other employment sectors of the growth points. Therefore, it cannot be stated that the basic industry has created the observed growth in other activities.

These findings reveal the importance of understanding the milieu as noted by Penouil. The methods used by the Danes and problems encountered in developing growth points in Greenland could be useful as planning levers in similar frontier regions.

PREFACE

The first official language in Greenland today is Greenlandic. It has replaced Danish which was the official language during the colonial era. However, since Danish historical materials were used extensively throughout the study, it was decided to maintain the Danish orthography. The orthography of some words has changed when transliterated from the Greenlandic language. Thus, for example, the uvular "q" in the present-day transliterated form, was expressed by the Danish "k".

The Danish monetary unit, the krone, to which references have been made frequently throughout the study, has fluctuated only slightly against the Canadian dollar in the period 1950-1976. In 1950, one krone was equal to $.16 Can.; in 1955, $.14 Can.; in 1960, $.14 Can.; in 1965, $.16 Can.; in 1970, $.14 Can; and in 1976, $.17 Can.

A glossary of Danish/Greenlandic words used in this study appears in Appendix XIII.

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At the offices of Den Kongelige Grønlandske Handel (KGH), there were several officials who provided invaluable assistance. *Vicedirektør* Jens Fynbo made available some important materials and also supplied letters of introduction to various KGH trade managers in the 'Open-Water' region. In the *økonomiafdeling, souschef* Henry Nielsen organized pertinent data while in the *produktionsafdeling, trawlere-afdelingsleder* Søren Abrahamsen made it possible to observe deep-sea trawler operations and explained many technical facets of the fishing industry in Greenland. The library staff at KGH cheerfully gave of their time to gather books and articles and in particular, I should like to especially thank *over-assistant* Annette Edelmann for her efforts in tracking down and finding some critical reports.

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Maps and other materials from Grønlands Tekniske Organisation (GTO) were supplied by *afdelingsarkitekt-chef* Vaagn Laage. In Greenland, GTO's 'rådgivende sektion' (advisory group) in Godthåb assisted in organizing my transportation within the 'Open-Water' region. For this logistical aid and many hours of good fellowship while travelling, my thanks to *boliginspektør* Flemming Scharf and *arkitekt* Kjaeld Vaerge Petersen.

One of the more enjoyable aspects of my field work, was the cheerful cooperation ånd well-known hospitality extended by Danes, both in Denmark and Greenland. It is difficult, therefore, to find words which can adequately express my gratitude to all of the above—and many others too numerous to mention in this short space. To all these people, I extend a heartfelt 'Tusind tak.'

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I INTRODUCTION

THE NATURE OF REGIONAL DEVELOPMENT

For many years there has been a growing concern over continual and persistent problems that retard development of regions within countries. Approaches to studying these regional problems are many and varied and should probably be carried out through interdisciplinary means. It is in the economic sphere, however, where much effort has been expended attempting to isolate critical factors and suggesting solutions to the 'regional problem.' If regions are compared under the heading of Productivity, several "universal factors" can be mentioned as determinants (either singly or in combination) for differing productivity rates however measured.

The Universal Factors

These universal factors may include capacity to make technological discoveries, an educational system that can shape versatility and capacity of a work force, ways in which resources are combined and directed at the enterprise or industry level, i.e. management, capital formation, size and quality of a labour force, and finally, an articulation of motivations expressed as an ideology or ethic for purposes of attaining greater productivity (Dunlop, 1969, pp. 350-357). Such 'universal factors' suggest the importance of understanding and refining certain definitions which are often used in discussing 'economic

development,' 'economic growth,' and 'economic system.'

Economic development. Economic development may be defined as

> . . . the process of enlargement, adaptive change or transformation of the general framework of any societal economy together with enhancement of the sophistication, education and technological competence of the people whose enterprise and livelihood are affected (Koefod, 1966, p. 247).

Economic growth and economic system. Economic growth is ". . . the name of a secular increase of average per capita real income." Thus, economic growth may be interpreted as a function of economic development. An economic system may be considered as

> . . . the societal organism or mechanism, by means of which a national or sub-national human community solves its general problems including resources allocation and the production, distribution, and redistribution of its aggregate income (Koefod, 1966, p. 248).

Regional Development Defined

The degree to which an area or region has succeeded in its goal of announced economic development, i.e. regional development, has usually been defined as ". . . increases in aggregate incomes or increases in levels of population" (Parr, 1970, p. 122). This commonly accepted definition of regional development would seem to be more in agreement with the term 'economic growth' than 'economic development.' This thesis, therefore, concerns itself with the broader definition of 'economic development' within a region rather than the more restricted approach to 'economic growth' of a region.

One of the more constant empiricisms is the obvious difference

in levels of development between regions. Downs has suggested four causes for observed imbalances between regions. These may be listed briefly:

1. The unequal distribution of human and natural resources.
2. The shifts over time in intensity of demand.
3. The location of some regions at the so-called "geographic outer edges" or in mountainous areas.
4. The role of migration in removing the more dynamic elements of a population (Downs; 1967, pp. 2-17).

Economic and Historical Explanations

From the economic point of view, the fact that regions fail to grow can be related to two basic points of view: the national demand view and the immobility view. Under conditions of national demand, the location of economic activity reflects rational decisions of firms and investors at any given time. The immobility view implies the presence of internal imperfections within a region preventing movement of both workers and investors.

The ability to overcome advantages offered by other regions or imperfections within a region, have been traced to two historical notions regarding regional development. The first, export base, claims that a comparative advantage in some economic activity leads to flows of income which in turn stimulate linked industries and other import substitutions related to non-basic activities (North, 1955, pp. 243-258). The second notion posits a sequential pattern of dominant specializations from a subsistence stage to an exportation-of-tertiary-activities stage (Hoover, 1948, pp. 187-196; Tiebout, 1966, pp. 160-164).

The extent to which these notions are mutually exclusive of each other, is questionable. The stages or sector notion may be considered a refinement or an elaboration of export base, i.e. the dominant specialization is in fact a continually changing 'comparative advantage' and functioning as a 'basic' or 'export' industry (Hilhorst, 1969, pp. 22-27; Thomas, 1964, pp. 424-426). Recognition of differing development patterns between regions has resulted in government policies which aim at redressing economic imbalances through a redistribution of income. Such assistance has usually been justified on welfare grounds or economic efficiency. That some type of assistance is necessary can be understood in light of the failure of any self-correcting mechanisms to alter the course of regional economic development (Hirschman, 1958, pp. 185-190). Myrdal makes the point that regional inequalities are wider and *increasing* in the poorer countries whilst they are *diminishing* in the richer countries as the welfare state is approached (Myrdal, 1957, p. 39).

Regional Development Policy

The requirements of a development policy, generally involve three broad areas: human resources, natural resources, and plant and equipment along with infrastructure (Perloff and Dodd, 1963, pp. 137-147). Not all regional problems can be approached with the same "mix," however, since the general share of industrial development differs not only from country to country, but also historically (Friedmann, 1961, pp. 75-97). Friedmann's thesis, as set forth in his classic study of Venezuela, regards regional policy ". . . as a function of the spatial transformations engendered by economic growth" (Friedmann, 1966, p. 6).

He develops a model of the varying regional policy emphases that should be followed when nation-wide levels of industry reach specified shares of GNP. Thus, when industry's share of a GNP is less than 10 per cent, the major aim will entai. fundamental improvements in education, health, agricultural organization, and transportation. When industrial shares of a country's GNP rise to between the 10 per cent to 25 per cent level, a regional policy becomes very critical because it determines spatial reorganization in the transition from an agrarian society to an industrial one. Beyond the 25 per cent level, problems for a regional policy are more in line with such concepts as "re-adjustment" or "re-development." Friedmann maintains that the model is evolutionary in nature proceeding to a post-industrial phase. Thus the phases may be correlated to Rostow's 'Stages of Growth' thesis in national economic development (Rostow, 1960, pp. 4-59). It is then possible to further conceive this thesis as a study of policy measures for an upward transitional region.

Balanced vs. *unbalanced growth.* There is often confusion regarding the degree of geographical dispersion or projects within planning schemes for developing regions. Although the terms "balanced" *vs.* "unbalanced" growth may imply spatial dispersion of planned development, in fact, both approaches stress concentration of economic activity. The "balanced" growth approach assumes the need for *simultaneous* investment to absorb demand and also take advantage of any external economies. "Unbalanced" growth is decision-economizing and allows *sequential* investment to take place as a result of various stimuli from maximized induced investment (United Nations Industrial Development Organization, 1967, pp. 24-26).

Internal economies of scale, recognized in determining efficient sizes of industrial plants, may also be applied to cities. Thus, minimum sizes of various forms of infrastructure, i.e. external economies, are needed if firms are to operate efficiently at designated points in space, i.e. cities (Alonso, 1971, p. 17). Localization economies occur when various plants cluster together. This maximizes efficiency and produces fewer plants within the same industry. Urbanization economies offer amenities of access to government and culture. In developing countries, infrastructure is usually limited along with transportation networks. The tendency then is a gravitation of industries to one or several favourably selected points.

Growth poles. It is precisely these perceived workings of economies—the plant/city level on the one hand and the inter-plant stratum on the other—which have been utilized in one particular regional growth strategy. The *pôle de croissance* (growth pole) was initially formulated by François Perroux in 1955 (Perroux, 1955, pp. 307-320). Perroux stressed the role of induced technological change due to a "propulsive" industry. The propulsive industry, by definition, has the greatest impact on regional development because of multipliers, linkages, polarizing, and complementary effects. Perroux, however, was not concerned with geographic space, but rather with firms, industries and sectoral interrelationships. It was Boudeville who extended growth pole theory into geographic space. According to him, a growth pole can be described as " . . . a geographic agglomeration of activities rather than as a complex system of sectors different from the national matrix" (Boudeville, 1966, p. 192).

In one sense, growth pole development represents unbalanced growth, from a spatial point of view, because no more than several regional growth poles can be developed at any one time. From the economic point of view, the theory is b lanced because a set of industries are planned according to some strategy. Consequently, regional growth poles may increase spatial imbalances (Towfighi, 1972, pp. 32-37).

Conceptual Extension of Growth Pole Theory

Growth pole theory is ambiguous and its meaning has changed as the idea has been subjected to increasing treatment. A review of the literature reveals a plethora of definitions which are often related to other concepts, e.g. central place theory. One source finally concludes that there is still no agreement as to what constitutes a growth pole or, furthermore, how to even measure such a phenomenon (Darwent, 1969, pp. 5-32). Indeed, it has been noted in some cases that while basic industry is the vehicle by which employment multipliers affect non-basic or residentiary activities, there are no quantitative relationships applicable to a specific economic sector or region. Another criticism is that with increasing diversification in employment, the establishment of new industries reduces the volume of imports required. Finally, multipliers are also modified by *non-basic* industries responding to demand for goods and services due to growth in incomes (Bernard, 1970, p. 18).

For the sake of clarity we again restate that the term "growth pole,' as formulated by Perroux, is deficient in spatial connotations. It is obvious that planned "propulsive" industries creating growth, can vary in size, impact, and spatial manifestation. Penouil has attempted

an ordering of distinctive spatial terms that convey a more accurate understanding of the various polarizing levels (Penouil, 1972, pp. 119-123). He suggests three levels: axes of growth, zones of growth, and points of growth. An axis of growth is a series of poles between which complementary relationships develop due to a major transportation route. A zone of growth is a large geographical area in which complementary relationships are established around one main nucleus. A point of growth exists when the propulsive industry has no effect or impact beyond a limited distance from the point. Of interest here, is the fact that in underdeveloped economies, e.g. backward areas of developed nations, *growth points* are more apt to exist while developed economies are characterized more by zones and axes of growth.

There are numerous difficulties in implanting a growth activity at a point in an underdeveloped regional economy. In the study by Penouil, he has developed a number of generalizations based on observations in African countries. He concludes that there are four critical phenomena influencing the choice of growth activities: natural resources, possibilities of employing local labour, availability of capital, and possible outlets. In discussing difficulties regarding diffusion of growth and development, it is important to recognize that the "milieu" can impose serious constraints. As Penouil points out, the milieu

> . . . is generally a powerful brake in the development not only because of the social structures which stand in the way of innovations, but also because of a production structure which is not enough diversified and does not permit the establishment of complementary relationships. The implanted growth activity cannot but turn outside and thus it presents the creation of a point which contributes little to the desirable structural change (Penouil, 1972, p. 3).

Such a statement seems to point up the fact that regional development, using growth pole (or growth centre) philosophy, will function differently depending on the type of geographical region into which a growth pole is implanted. One cannot expect, therefore, a depressed, worn-out industrial region to behave in the same manner as an underdeveloped, backward frontier region. It is a backward, underdeveloped, frontier region and four designated growth points which will be major concerns of this thesis.

REVIEW OF CIRCUMPOLAR NORTHERN DEVELOPMENT

Most regional development studies involving a spatial point of view, have concentrated on humid and mid-latitude lands. Yet with the Northern Lands, evaluations of regional development programs are relatively few in number.

Canada and the United States

In Canada and the United States, interest in planned development was virtually non-existent prior to World War II. Jenness characterized Canada's attitude towards northern aboriginals as ". . . an inferior people who had always formed part of the region's fauna, and always would" (Jenness, 1968, p. 23). A similar outlook could also be found in the American application of the 'separate but equal' doctrine in native education and development. In the area of economic development, two ". . . extreme types of development" were proposed: ". . . (1) to make Alaska a source of raw materials for the United States, and (2) to

give it as independent and well-rounded an economy as the physical condition there will permit" (National Resources Committee, 1938, p. 21). The logic behind a decision to develop Alaska under the first alternative was that resources did not belong to Alaska, but to the continental United States. In a more recent time period, it is acknowledged that environmental problems and orderly economic growth and development "transcend" political and national boundaries and ". . . require solutions in an areawide context" (Jones, 1968, p. 203).

It was only as a result of World War II that Canada embarked upon an attempt to develop its North and invested heavily in native welfare and education. The war was the major event that wrenched many native peoples from their traditional hunting and trapping way of life (Rea, 1968, p. 39). Whereas in 1939 per capita expenditure by the Federal government for Eskimo health was $4.00, by 1961 this had increased to $400 (Judd, 1969, p. 595). In order to carry out various educational and welfare policies, the semi-nomadic way of life came to an end. One writer has described this process:

> Historically, we must note that the nucleation of otherwise scattered, small units of hunting and trapping native populations, both Eskimo and Indian began after 1948 but then proceeded at an accelerated rate after the reorganization of Canadian departments that led to the formation in 1953 of a new and powerful centralizing agency for northern development—the Department of Northern Affairs and Natural Resources. . . . The existence of new urbanized towns is very largely a result of the need to get native peoples who require, in terms of the new value orientations of our temperate based culture, various health, welfare, educational, and economic assistance, near to the specialists who will supply the services (the teachers, administrators, technicians, nurses, etc.) (Fried, 1964, p. 57).

In both countries, efforts have been made to draw native peoples into

commercial activities such as reindeer herding, agriculture and carving. However, they have not generally shared in those major developments that have been tied to the mining of non-renewable resources. One reason for this is that there has been very little in the way of on-site benefication of raw materials. Transportation systems will adversely affect secondary production efforts since the transport systems often suffer from distance and physical factors along with one-way hauls. It would appear that transportation infrastructure is only laid down in response to a need, e.g. the building of the Pine Point Railroad, the Alaska Highway, etc. In 1958, the Canadian federal government proposed a major road building program to increase transportation nodes in the North. Unfortunately, there was little planning as to how these roads would further the process of regional development. As a result they were criticized as "roads to nowhere" or "roads from igloo to igloo" (Judd [A], 1969, p. 804). In Alaska, the "marine highway" system enjoys subsidization which is equal to annual road maintenance costs of the Alaska Highway. This, it was felt, would offer a choice of transportation mode and would function to evolve a more competitive rate structure that would further benefit industrial location in Alaska.

At the present time, development assistance in Canada is designed mainly to encourage mineral exploration (Brewis, 1969, pp. 224-241). Of some significance, in this respect, was a ten million dollar program, announced in January 1969, to finance loans to small businesses and secondary industries. This seems to be the only sign of an effort to widen the industrial structure in northern Canada.

There is no separate federal administrative agency to deal with Alaskan problems as in Canada. A large portion of monies flowing into Alaska are via the various federal agencies. Mineral resources and power development consume about one-half the investment with the other half (through the Department of Agriculture) going for "rural economic assistance" (Cameron, 1970, pp. 118-119).

Scandinavia

In Scandinavia's North we find, in some respects, problems similar to North America. Changing technology affecting primary resources development, has brought about major changes in settlement patterns. In Norway, capital intensiveness, isolation, and depletion of resources have altered the farm-forests, seter farms, and farming-fishing complexes respectively (Hansen, 1972, pp. 1-7). In Sweden, rationalizations in forestry, mining, and the wood-processing industries have brought about extensive unemployment problems. As a result, the northern provinces have been subject to effects of heavy out-migration. As part of a regional development plan to slow down population flows to South Sweden, towns in which were concentrated minimum threshold populations, were established. These will provide agglomerative and external economies that favour industrial location (Bylund, 1972, p. 232). By changing boundaries of municipalities, greater attention could be focused on specific nodes. In addition, 20 centres (designated as "A" centres) have been selected because they had the 30,000 minimum population. This was considered the number necessary to satisfy requirements for a secondary school and other services. These "A" centres have been able

to accumulate 75 per cent of new job opportunities. To ensure success of the "A" centres, industrial location policies provide subsidies for retraining, partial payments of transport costs on movement of final products to market, and tax free allowances on profits if a firm relocates entirely or constructs a branch plant in the North. It has been estimated that since 1965, measures such as these will create 10,000 new jobs in the North (Organization for Economic Co-operation and Development, 1970, p. 91).

In Norway, the problem of stabilizing an out-migrating farm population was attacked as early as 1912 by 'SeLskapet Ny Jord' or 'The Society for the Country's Domestic Colonization and Limitation of Emigration' and a 'Bureising' or 'Homesteading' program. Although effective, both programs have now been effectively terminated (Stone, 1971, pp. 5-14). With the exception of several programs that operated along lines of sectoral planning for certain type areas, the North Norway Development Program (1951-1961) was the only real regional development program (Atlantic Provinces Economic Council, 1962, pp. 1-20). In the ten years that it was in force, investment was concentrated in primary industries producing metals, hydroelectric development, and fish processing. Sommers and Gade have shown through an analysis of the program, that there was no attempt to develop economic growth points and the fact that funds were available only on a first-come, first-serve basis, influenced the strengthening of urban areas in the Nordland municipality. The present Regional Development Fund will now shift the investment strategy to the economic development of those communities

considered more marginal in the past (Sommers and Gade, 1971, p. 534). Like Sweden, Norway has also used many of the same methods for rationalizing the spatial structure of the economy and encouraging private investment through tax incentives and infrastructure development.

Perhaps a major difference in regional development policies between Scandinavia and North America is that in Scandinavia, forestry and farming represented labour intensive activities. The same cannot be said for North America. Historically, efforts in Scandinavia were made to stabilize these industries. In the present period, three elements of regional policy common to Scandinavia (including Finland) can be noted:

1. Encouraging industry to develop in economically viable centres.

2. Inducing workers to move to these centres from smaller towns and farms.

3. Assisting the residential population in depopulated areas.

The U.S.S.R.

In any circumpolar review of Northern Development, consideration of development strategies must include the U.S.S.R. This can be readily seen if we compare populations of the Northern Lands.*

Country	*Population* (approx.)
U.S.S.R.	5,000,000
Scandinavia	1,056,000
Alaska	300,000
Canada	50,000
Greenland	50,000

*Karpov *et al.*, 1969, p. 293; Vorren, 1969, p. 293; Gibson, 1972, p. 6; Rogers, 1962, p. 95; Ministeriet for Grønland, 1971, p. 11.

With such a large population, 20 per cent of which is considered native, the Soviet government has had to prosecute a vigorous policy of northern development (Gibson, 1972, 27 pp.).

The Russian concept of northern development after the Revolution was a commitment to achieve freedom from dependence on critical imports. In addition, "territorial production complexes" stressed the need for a regional autarky to reduce movement of goods over vast distances. Shabad has drawn a distinction between Czarist and Soviet approaches by stating

> . . . the location of industry at centers of raw materials in contrast to what was viewed as the pre-revolutionary colonist policy of exploiting the Russian hinterland for the resources (Shabad, 1969, p. 7).

This is probably one reason why the Soviets, as early as 1932, introduced a system of increased wages for work in their North. These rates of increment have been revised several times and the zones for differential increments have also been adjusted. Nevertheless, technological breakthroughs and the drift towards capital intensification suggests that Soviet northern development may be heading in a direction similar to that which we find in North America. North cites a number of these changes which may increase the cost consciousness of the Soviet government:

— Improvements in technology has reduced transportation of raw materials to areas of consumption.

— Declining military strategic advantages are ruling out a dispersed industrial development.

— The present birthrate of the Soviet Union is very low and this will necessitate a more effective spatial distribution of the labour force in the future. This lowered birthrate would also suggest that increasing pressure would be brought to bear on the northern wages increment system.

— Recent notions regarding optimality and city size suggests that over-concentrated population development should not be allowed (North, 1972, p. 197).

A similar attitude is echoed by Terence Armstrong

> . . . that northern development should be limited to necessities; that big cities like Norilsk arise at least partly from prestige considerations and are not economically justifiable; and that settlement in the north should be planned for the expected period of exploitation of the resources, and no longer. The reason that these simple and logical views were not advanced long before seems to be that the motives for northern development had always previously been more than just economic. Confirming sovereignty over the area, sovietising the northern peoples, making strategic dispositions—all these undoubtedly played a part. If serious thought is now being given to a policy of comparatively quick in-an-out, this must indicate diminishing relative importance of other motives (Armstrong, 1968, p. 121).

Circumpolar Northern Development—A Recapitulation

In summary, it appears that the North American north is resource oriented in its northern development programs. Governments are willing to assist in exploration for resources and subsidization of infrastructure. Both the Canadian and American governments have shown little interest in becoming directly involved in primary production. (Although Canada has in fact done just this if we consider the organization of Panarctic Oil and a few other crown corporations.) There seems to be little in the way of analyses concerning the 70-odd settlements in the Northwest Territories as potential growth points. The closest to evaluating aspects of town development is Ira M. Robinson's contribution (Robinson, 1962, 177 pp.). The towns selected were Kitimat, Elliot Lake, Drayton Valley, and Schefferville. The study analyzes and describes the destinies of these four towns which are tied to a single mineral resource

and are all located beyond the settled areas of the South.

In the oft-time socialist countries of Scandinavia (including Finland), government involvement in infrastructure, labour policies, and transportation is more developed than in North America. The problems are of a longstanding nature and have required a restructuring of entire administrative and settlement patterns. Sommers and Gade's work and Bylund's study, have described and analyzed results of government investment in primary industries along with plans setting up minimum population thresholds in towns in order to attract industry.

In the U.S.S.R., a once very active policy to fully develop their north based on political and strategic considerations, saw heavy investments and attractive wage differentials from an early date. Between increasing costs for labour and recent technological innovations, the idealistic post-revolutionary aims of regional independence may now be something of the past as production centres become increasingly market oriented.

GREENLAND—AN EXAMPLE OF REGIONAL DEVELOPMENT IN THE NORTH

In the above section on regional development, we indicated that this thesis was concerned with a *broad* definition of economic development, that it would consider policy measures for an upward transitional region, and that it would examine the performance of growth points in a backward, underdeveloped, frontier region..

We consider Greenland as an example of a northern economy within

which all of the above pertain. With respect to a "broad definition of economic development," the Danish government has, since 1774, considered Greenland as a very special ward of the state. Development was controlled by a government monopoly—den kongelige grønlandske Handel (KGH) (The Royal Greenland Trade Department). For 179 years, this government crown corporation was the institutional vehicle for carrying out Danish plans for a protective and paternalistic policy. Its major aim was to isolate native Greenlanders from those income fluctuations that characterized other inter-dependent economies. In 1953, however, Greenland's colony status was abolished as a result of a change in the Danish constitution. Among other important constitutional changes was the incorporation of Greenland as an integral part of the Danish realm and its official transformation into an *amt* (county) sending two members to the 'Folketing,' or Danish parliament.

As early as 1950 the protective and paternalistic policies had been ended and Denmark committed herself to develop both the economic base and human resources of the island. Transition in both fact and spirit was recognized as being difficult and therefore the state would relinquish only gradually its control of the economy. These changes in administrative status and monopolistic policy were initiated as a result of the Greenland Commission enquiry of 1948. Its conclusions and recommendations formed a basis for bills that were enacted into law as part of the constitutional changes of 1953. The spirit of the commission was clearly in line with Koefod's definition of economic development. After a brief description of guidelines for future development, the commission

made the following statement:

> These suggested arrangements for different cultural, social and economic sectors of Greenlandic society must be considered necessary if Greenlandic society is to reach a responsible level. These are necessary conditions for development towards greater cultural and economic maturity in order that the population has the possibility, in the future, to utilize economic resources more rationally and intensively than at present, thereby creating their own economic base. A postponement of a solution to the problems will only make the challenge more difficult and more expensive (author's translation). (*Grønlandskommissions Betaenkning, 1*, 1950, p. 60).

With respect to Greenland qualifying as a transitional economy, we take a coign of vantage to disregard industrialized Denmark proper. Considering the vast distance that separates the two regions, both culturally and spatially, this would appear justified. An examination of money income in Greenland for one point in time, e.g. 1960, indicates that net traded-in value of fish, seals, and reindeer products was ten million kroner in 1960. During the same period, wages and salaries from manufacturing (chiefly processing fish) also accounted for ten million kroner. The total labour force income for 1960 was 95 million kroner. Manufacturing or processing harvested products as a component of the total income, was therefore, almost 10 per cent (Ministeriet For Grønland, 1975, p. 134). This suggests that the industrial structure of Greenland only barely qualifies as a transitional economy. There are, nevertheless, compelling reasons for a spatial reorganization of the economy.

Fishing—Distinctive Features of a Primary Resource Industry

As an industrial base, fish is a product that has low demand elasticities. For the most part, per capita consumption in highly

developed countries tends to remain steady or go down as per capita income increases. Distribution costs are also high, usually reflecting the specialized and perishable nature of fish. Another complicating factor is that often a distinct market exists for each species of fish. While a limited degree of substitution can—and does—occur in times of scarcity, species such as herring, cod, sardine, tuna, and shellfish cannot be substituted. Finally, it is important to note, in this respect, that dietary habits have usually meant that fish is a less preferred food ". . . and never accounts for more than 3% of the total calorie intake in a country . . ." (Coull, 1972, p. 24). Although fish will probably always have a place on many national menus (and may increase in importance with the trend away from excessive carbohydrates), the industry will always be plagued by short-term fluctuations in supply. This phenomenon has traditionally been met by building in additional capacity to handle above-average catches. Nevertheless, this increases overhead costs. In a similar manner, fishing has become increasingly capital-intensive with ships operating year round and ranging over vast areas.

Fishing, as a primary resource industry, suffers from another problem—one which has its roots in the nature of a common-property resource. In sea fisheries, the natural resource is not a private property. The concept of *marginal productivity*, i.e. varying incremental units of a factor of production to increase the total product, does not apply in fisheries as in situations where ownership is private. Instead, we find *average productivity* prevailing, i.e. total production divided by fishing effort. This results from the fact that average costs and

marginal costs are identical due to an assumption that costs of fishing supplies, etc., are unaffected by the amount of fishing effort. Because each fisherman is free to move from place to place, the net effect is to deprive fishing grounds of those kinds of controls which will, in land-based primary economies, produce maximum sustained yields. Competition by fishermen, accordingly, produces problems of overfishing and exhaustion of stocks (Gordon, 1954, pp. 128-142).

The Fishing Industry in Greenland

In Greenland, the major industry through the first 20 years of the twentieth century, was sealing. Not only did this activity create a subsistence economy for Greenlanders, but it also helped defray administrative costs incurred in governing the land.* Indeed, the dominant guiding principle of the Danish administration was that the economy should *hvile i sig selv* (pay its own way).

In the early 1920s, climatic changes causing a decline in seal stocks and an increasing human population coincided with appearances of cod in large numbers off southwestern Greenland. With relief, Danish

*In fact, however, the mining and sale of cryolite had for many years been the most important factor in helping to equalize trading accounts in Greenland. In the period 1925/26—1948/49, Denmark incurred expenses of 188,207,000 million kroner against an income of only 83,942,000 million kroner. This produced a deficit of 104,265,000 million kroner. Cryolite income was 93,215,000 million kroner which produced a net deficit of only 11,050,000 million kroner for the 25 year period. The position of the Danish government on the matter of an economic base for the Greenlanders may be summarized thus: "Greenland's most important export is cryolite, but since this mineral is produced without any contribution from the Greenlanders, the prices received have little meaning in their economy" (author's translation). *Grønlandskommissionens Betænkning 5*, "Erhvervsmæssige og Økonomiske Forhold, 1," København, 1950, p. 14, and Bilag 2, pp. 150-152.

economic planners who were at that time searching for some alternative to sealing, shifted the economy to fishing. However, the fishing industry in Greenland remained labour intensive (or non-capital intensive), structurally deficient, and unable to compete in world markets. On the other hand, it can be argued that the decision to involve Greenlanders in commercial fishing represented a recognition of a continued orientation to the marine environment. Fishing was an activity with which Greenlanders were familiar and one upon which Danish planners could depend for some "carry-over" in the way of certain skills. This same point has been brought out, in other contexts, by Friedmann and Estall (Friedmann, 1961, pp. 75-91; Estall, 1966, p. 100).

The Commission of 1948-1950

The choice of a new economic base, albeit wise from practical and social considerations, proved expensive for the Danish government for those reasons cited above. These problems grew in importance and were some of the more immediate causes for social unrest in Greenland during the late 1940s. This resulted in the establishment of the Greenland Commission of 1948.

In moving Greenland's economy into competition in world trade, the Greenlandic fishing industry needed capital, both in the form of larger boats and more adequate processing facilities ashore. From the standpoint of economics of fishing and some other aspects peculiar to the industry, the availability of fishing as the only real choice was unfortunate. The Greenlandic population could be described as still being rather primitive. This implies the lack of a work ethic conforming

with the industrial world, lack of education and training to manage an industry, and a need to realign the spatio-economic structure so that overall production costs could be decreased (Lidegaard, 1969, pp. 121-124; Hauser, 1967, pp. 118-119).

The development plans, as outlined by the 1948-1950 Greenland Commission Report, did not provide for enough capital investment in the fishing industry nor propose a re-organization of the industry around growth points. These failures became increasingly apparent toward the later 1950s. In 1960, therefore, a new commission was appointed to review progress in development and recommend new strategies. This report, issued in 1964, is commonly referred to as the 'Greenland, 1960 Report' or 'G-60.'

G-60's report, stressed the importance of rationalizing the spatial structure of Greenland's economic base, i.e. location of the fishing industry, in the 'Open-Water Region' off southwestern Greenland. This 'Open-Water Region' takes its name and economic significance because it is not subject to blocking effects by *Storisen* (the pack ice) drifting around from Kap Farvel nor *Vestisen* (the west ice originating in Baffin Bay) and drifting east to around latitude 66°N on the West Greenland coast. A number of rich fishing banks exist in this 'Open-Water Region' and therefore a year-round fishing industry is considered possible. In this 'Open-Water Region' four ports exist: Holsteinsborg, Sukkertoppen, Godthåb, and Frederikshåb. These four ports have been singled out as *de facto* growth points for rationalizing the fishing industry.

Thesis Objective and Statement of Problem

The major objective of this thesis is an evaluation of Danish efforts to rationalize and concentrate the basic industry of Greenland in the 'Open-Water Region.' The study is undertaken within the terms of reference as discussed above for economic development, transitional regions, and growth points.

The geographic perspective perceives the role of other phenomena as they are distributed in space. These phenomena interact in the process of economic development and provide another dimension, or a spatial expression, in understanding world-wide economic development. This particular 'point of view' will be increasingly important in northern development. Models of economic development, based often on limited observations in the industrialized South, will have to be refined in order to be more universal as planning devices in remote regions such as the North.

As a backward region in an advanced country, improving Greenland's economy has been a major endeavour of the Danish government. Modern development plans are embodied in the Greenland Commission Reports of 1948-1950 and 1960. Developing the 'Open-Water' ports has been deemed essential if Greenland's fishing industry is to be competitive. In this context, achieving economies of scale is of a fundamental necessity. Attainment of this goal involves policies which have as their central aim the concentrating of activities in the 'Open-Water Region.' A spatial approach to development of these *growth points* include increased geographic mobility of labour, pricing policies of *Den kongelige grønlandske*

Handel (KGH)* for raw materials, and the form of the capital investments program. Much of the data analyzed are statistics and other information from KGH. Since KGH still controls 80 to 85 per cent of Greenland's economy (Trap, 1970, p. 129) use of and conclusions drawn from these figures are valid to assess regional development in Greenland.

Geographic mobility of labour. The need for an available labour force in the 'Open-Water' towns was obstructed by lack of suitable housing. By favouring the 'Open-Water' towns in new housing starts, migration patterns were set in motion. We have population data, as well as in-and-out migration to other communes in Greenland for the 'Open-Water' region. Analysis of patterns would answer questions concerning areas most affected by out-migration to the 'Open-Water' region.

KGH's pricing policy. The four communes of the 'Open-Water' region have a hierarchy of settlements consisting of one major town (which has the same name as the commune) and several villages or *udsteder*. Most of the *udsteder* have always participated in the fishing industry. The costs, however, of gathering raw rish or semi-processed products into central towns are expensive. In the latter 1950s, a three-tiered, geographic pricing system for purchasing raw materials was adopted. The aim was to encourage fishermen to locate in central towns or at least deliver their catches to central towns. A catch delivered to a central town received the highest price. Some *udsteder*, because of their accessibility to

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*Hereafter, abbreviated to KGH.

central towns, received higher prices for fish than the more remote places. Effectiveness of this pricing policy can be measured by tracing *indhandling* (cash value paid by KGH to fishermen for their catches) in the three types of places through a period of time. The pricing policy has, in all likelihood, functioned to concentrate *indhandling* in central towns. Similarly, populations of active fishermen at the various places should also show a tendency towards concentration in central towns. *Udhandling* (KGH's sales of products to Greenlanders) can be compared to *indhandling* and will reveal deficits in maintaining the expensive, subsidization program for all settlements. A means of investigating this situation is to analyze KGH's operation of the commune boats. Since there are no roads linking settlements in Greenland because of the physical fragmentation of the island, boat transportation is the other available means for internal movement of goods. To each commune one or several boats are attached whose main function is the freighting of supplies and raw fish within a commune. For a period of years, detailed cost figures were recorded, e.g. fuel, value of goods freighted, repairs, etc. A detailed analysis of one boat's operations will shed additional light on tracing imbalances resulting from geographic price discrimination.

Capital Investments Programme. The Danish commitments to regional development in Greenland are best illustrated through a study of public investments. For the 'Open-Water' region, these data have been retrieved by infrastructural features for each year from 1951-1972. Analysis of investment patterns by type of investment, commune, central town, and

village should demonstrate the sectors which Danish planners gave priority to in approaching questions of balanced *vs.* unbalanced growth. Public investments in central towns can also be analyzed in terms of the varying proportions allocated by grouped infrastructural sectors. Part of the public investment program was the Economic Development Programme, whereby fishermen, among others, could receive grants and long-term loans for purchase of fishing boats and other equipment. The effect of this program can be followed in growth of numbers of fishing boats. Because of service facilities, i.e. shipyards, and pricing arrangements as discussed above, we suspect that the central towns have received progressively greater shares of these newer and unusually larger vessels, i.e. vessels over five gross registered tons.

A long-term program of heavy public investments in Greenland's economy should have some effect on the labour force structure. While data are lacking for 1975, it is possible to trace changes in sectoral employment for three separate time periods in central towns and *bygder*: 1965-1970.

Social diseconomies. Within a period of less than 25 years, Danish planners have moved Greenland's economy from a rural, primitive condition to one that is relatively more urban and increasingly industrialized. Much of this has been accomplished by a large Danish cadre of professional and technical workers. The resulting "culture contact" has, in some cases, been devastating. Since, in most cases, Danish workers came to central towns, the trappings of Western society were most pronounced in these places. In addition, the policy of "westernizing" Greenlanders meant an

introduction of Danish culture. In the process of adjusting to Danish mores and material goods, the Greenlander has often suffered due to rapid transformations of lifestyles in both space and time.

Two measures for assessing these ill effects are the reported cases of venereal disease and mental illness. In 1960, of a total population of 33,140, 2,762 or 8.5 per cent were Danes. In 1972, the Danish component had increased to 8,492 or 18 per cent out of a total population of 46,800. These changes in the number of Danes in Greenland can be regarded as having some profound influences on the Greenlandic populace.

The study then can be considered as a detailed investigation in the problem of regional development. The difficulty of selecting suitable time frames and determining the study area, is easily determined. The relatively good statistics—both spatially and temporally—offer excellent surrogates by which the various phenomena influencing development can be studied and measured.

Chapter II

GREENLAND—DENMARK'S NORTHERN PROVINCE

Greenland is the largest island in the world. It is 2,186,000 km^2 (874,400 square miles) and is situated on the northeastern flank of North America (*Bogen Om Grønland*, Politikens Forlag, 1970, pp. 16-19). At Nares Strait 50 km (27 nautical miles) separates Greenland from Ellesmere Island. Iceland lies 300 km (162 nautical miles) to the east and Svalbard 400 km (216 nautical miles) to the northeast. From its most southerly point, at approximately 60°N, Kap Farvel (corresponding to the northern boundaries of Canada's Prairie Provinces), Greenlandic territory passes through 24 degrees of latitude before reaching Kap Morris Jessup at 83°N. The north-south axis, about 2,700 km (1,700 miles), is similar to the distance between Denmark and the tip of North Africa or Edmonton to the Mexican-American border. At its widest point, a line from Nordøstrundingen (11°W) to Kap Alexander (71°W), the distance is 1,050 km (662 miles) (*Bogen Om Grønland*, 1970, pp. 16-19; Fristrup, 1965, pp. 25-30).

The 39,000 km (24,570 miles) coastline is deeply incised with many fjords, islands, and skerries. Of the total area, 1,726,400 km^2 (665,000 square miles) are covered by an inland ice cap. An area of 76,000 km^2 (30,400 square miles) is also designated as active glaciers. The margin

of ice-free land, totalling about 386,600 km^2 (154,640 square miles) gives a ratio of ice-covered to ice-free land that is in the order of 5:1 (Fristrup, 1966, pp. 19-30). The width of the ice-free margin varies between 90-175 km (57-110 miles). The icecap itself averages more than 2,100 m (6,888 feet) above sea level. If it were to melt, water levels in the oceans around the world would rise by about 6 m (20 feet) (The Royal Greenland Trade Department, 1973, p. 99). Thus, 80 per cent of Greenland is covered by ice, which, from a global view accounts for about 12 per cent of the world's total land ice.

In modern times, i.e. since circa 1700, most of the settlement has been on the southwest coastal region. This region continues to offer the only real possibilities for continued survival in a land which, at best, can be described as being among the world's least favourable habitats for man. The Danish government has based its strategy for regional development on a recognition of certain aspects of the physical geography and a long-standing paternalistic policy towards Greenlanders (Baird, 1964, pp. 248-254).

THE PHYSICAL SETTING

Geologically, Greenland is an extension of the pre-Cambrian Canadian Shield. The southwestern coast consists of an Archaen block dominated by gneissic rocks. Extensive continental glaciations have produced the typical smooth and rounded rock masses. The directions of the glaciers are also evident. Scouring and grinding the bedrock as they moved, numerous scratches, or striations, were left on the rock

surfaces.

In sharp contrast to this landscape, are the sharp, jagged and steep-walled fjords. This reflects the action of alpine glaciation in mountainous regions. In places like Søndre Stromfjord, features such as hanging valleys, cirques, and lateral moraines are very much in evidence.

'Nunatakker,' those non-glaciated mountains rising above the ice sheets, are found in several different places in Greenland. In Frederikshåb commune, they reach heights of 7,000-8,000 m (14,464-16,531 feet). On the seaward side, the ice-free margin 50-60 km wide (31.50-37.80 miles) slopes gradually down to sea level. However, in the northern portions of the commune, fjord landscapes predominate. Mountains in this area reach the 1,018-1,784 m levels (3,339-3,687 feet).

In Godthåb commune, two major landforms are encountered: old, raised strandflats and a plateau paralleling the ice cap. The strandflats have been heavily glaciated and thereby lowered some 10-30 m (33-98 feet). In the northern portions of the commune, the plateau widens to about 100 km (63 miles).

In Sukkertoppen and Holsteinsborg communes, the alpine landscape predominates from Sukkertoppen town to the Søndre Stromfjord area of Holsteinsborg commune. South of Sukkertoppen town are the strandflats which continue north from Godthåb commune. North of the town, the alpine landforms become more prominent. North of Søndre Stromfjord, the scenery becomes less spectacular. Here the landscape is a surface that has been extensively peneplained. Elevations are between 550-950 m (1,804-3,116 feet).

Throughout the southwest, the most common erosional feature is the *umanak*, an isolated, pointed, heart-shaped mountain located along coastal areas. Depositional features, however, are also common. Outwash plains have often served as settlement sites for former Eskimo and Norse settlers. This is not to suggest that the southwest coast has vast tracts of level land suitable for large-scale settlement. Indeed, the opposite is often the case. As the weight of the glaciers subsided with melting, the land rose. In many places, glacial streams became dammed up, creating, in some cases, lakes. Raised beaches also became a regular phenomenon since the re-emergence of the land was between 100-200 m (328-656 feet).

The Greenland climate is not favourable for soil formation. Soils in Southwestern Greenland are poorly developed and generally acidic. The limited drainage and aeration also retard organic decay by bacterial action and consequently such arctic and subarctic soils are generally deficient in nitrogen.

In spite of the general harsh climatic features, local situations have created habitats for approximately 4,000 plant species (Trap, 1970, p. 83). About 500 are "higher" species, i.e. vascular plants. The remainder may be consigned to "lower" groups, i.e. mosses, fungi, algae, and lichens. In Southwest Greenland in favourable sites at the heads of fjords, modified forms of birch (*betula*) forests are found. Here, trees can reach 5-7 m (16-23 feet) in height. In addition to these birch types, a considerable amount of mountain alder (*alnus*), scrub willow (*salix*), and assorted ferns may be found. Crowberry, sedges, and poppies are other plants which may be viewed as having some significance in grazing regions

for a steadily growing sheep industry.

Aside from terrain and edaphic conditions, two other features of the physical environment combine to place added pressure on this region. These are the climate and related hydrographic–sea ice conditions.

Climate

The climate of Greenland, according to Köppen's classification, is an 'E' or ice climate. This pertains to all of Greenland except for a very small area in the extreme southwest which has been designated as 'sub-arctic.' The 'E' climate has a mean temperature whose warmest month does not rise above 10°C (50°F). Significant tree growth is impossible and therefore dwarfed forms are all that occur. Climatic latitude allows some cultivation of forage crops for an emerging sheep industry, but at the best of times, risks are great.

The seasonal weather patterns are conditioned by frontal migrations originating over the Atlantic waters or the higher arctic regions. In the winter, a ridge of high pressure extending from Siberia over the Pole to the Yukon-Mackenzie regions, creates clear skies and dry conditions in Northern Greenland. The 'Icelandic low' (between Greenland and Iceland) places Southwestern Greenland in the paths of frontal movements between polar and arctic air masses. Heavy cloud cover and considerable snowfall is typical in this part of Greenland. At Nanortalik, the most southerly of all Greenlandic towns (60°N) the winter mean temperature is -4°C (25°F).

In summer the 'Icelandic low' is attenuated over mid-Greenland. This produces dense cloud cover, frequent fogs and precipitation. Temperatures, in July, throughout Greenland can vary between 6-8°C (43-47°F),

but in some valley regions of the extreme southwest, temperatures can go above the Köppen defined 10°C (50°F) limit.

Precipitation also shows the effects of a maritime climate in the south while a more continental condition prevails in the north. Compare, for example, precipitation at Nanortalik in 1972, with that of Thule, the most northern town. Nanortalik recorded 747 mm (33 inches) while Thule had 88 mm (4 inches). See Appendix I for climatic data of selected stations.

There are significant differences between mean temperatures in northern and southern Greenland. To a large extent the explanation can be found in the length of daylight. The polar circle, bifurcating Greenland near Søndre Stromfjord, determines a winter solstice, and dark period, for the most northern part of Greenland that can last 20 weeks.

A phenomenon of local importance is the *fjeldkast*, a katabatic wind that develops in both summer and winter over the inland ice cap. The density of air induces downslope movement, bringing about 20-40°C temperature rises. A *fjeldkast* can reach a velocity of over 50 m a second (164 feet per second) on coastal regions of Greenland. It is, therefore, regarded as being especially dangerous for navigation in Greenland waters. In the period from November to December 1875, the coastal region from Ivigtut to Upernavik was subjected to an almost constant *fjeldkast*. During a 14-day period in February 1901, the *fjeldkast* at Ivigtut forced temperatures up over the 10°C (50°F) level. Only once in 13 days did night-time temperatures go below 0°C (32°F).

The climate of Greenland has undergone changes. In the period

from 1890-1930, or 1940, recorded temperatures indicate a distinct amelioration. This effect has been more apparent in winter than in summer. In the period from 1940-1960, or 1970, these ameliorative aspects are less distinct and winter mean temperatures seem to have been in a state of general decline. Autumn mean temperatures have continued high during this period. There are, then, signs for another climatic swing towards colder conditions.

Christian Vibe has examined the extent and density of drift ice in Davis Strait over the last 150 years (Vibe, 1967, 227 pp.). He detects three stages of sea ice development: drift ice stagnation (1810-1860); drift ice pulsation (1860-1910); and drift ice melting. The last stage—the drift ice melting state—ended in 1960. There is now a return to the stagnation-of-drift-ice stage which previously dominated Greenland from approximately 1810-1860. The climate during this period was relatively cold, dry and stable. Reindeer (*Rangifer tarandus*), arctic fox (*Alopex lagopus*) and sea mammals increased, but codfish showed declines. The next stage—drift ice pulsation—is marked by relatively unstable and wet conditions. Reindeer declined and codfish continued to occur sporadically.

Recorded meteorological data for two places in Greenland suggest some support for Vibe's drift ice stages. Jakobshavn is located in the Disko Bay area and Angmagssalik is on the southeastern coast. TABLE 1 is a record of mean temperatures for these places during a 63-year period. The influence of higher summer mean temperatures is less apparent than the increase in mean winter temperatures.

TABLE 1

Town	Mean Temperatures at Jakobshavn and Angmagssalik (°C)									
	1883-92	1893-02	1903-12	1913-22	1923-32	1933-42	1943-52	1953-62	1963-68*	Mean
Jakobshavn										
Summer	5.0	5.3	5.9	5.0	6.0	5.7	6.0	6.2	5.5	5.6
Winter	-18.1	-17.7	-17.2	-16.4	-13.0	-11.3	-11.9	-12.5	-11.5	-14.7
S-W	23.1	23.0	23.1	21.4	19.0	17.0	17.9	18.7	17.0	20.3
Mean	- 6.3	- 6.0	- 5.2	- 5.7	- 3.1	- 4.2	- 4.0	- 3.9	- 3.4	- 4.8
Angmagssalik										
Summer	—	5.0	5.2	5.1	5.7	6.2	5.8	5.7	5.1	5.5
Winter	—	- 7.9	- 8.2	- 7.5	- 5.2	- 5.6	- 5.6	- 5.7	- 6.8	- 6.6
S-W	—	12.9	13.4	12.6	10.9	11.8	11.4	11.4	11.9	12.1
Mean	—	- 2.3	- 2.5	- 1.9	- 0.3	- 0.2	- 0.5	- 0.6	- 1.4	- 1.2

— No data

* Data are for 1963-1966

NOTE: "Summer" includes the months from June to September inclusive and "Winter" includes the November to March period. "S-W" is the difference between Summer and Winter mean temperatures.

Source: Trap, *DANMARK*, "Grønland," vol. 14, p. 78.

These data show little evidence of a shift to colder conditions commencing around 1950. Vibe has demonstrated this trend more clearly using data from Upernavik, a town north of Disko Bay in the so-called 'Hunting Districts.' Using a three-year moving average of yearly means, there is a general movement towards higher temperatures culminating around 1930. Thereafter, declines in mean annual temperatures begin and after 1940 are in sharp contrast when compared against the 1930-1950 period* (See FIGURE 1).

Hydrographic—Sea Ice Conditions

A most significant physical feature affecting Greenland is the series of "banks" located anywhere from 50-100 km (27-54 nautical sea miles) off the Southwest Greenlandic coast. These banks are feeding grounds for a large number of different fish with cod (*Gadus callarius*) being the most important and numerous. Others include: greenland halibut (*Reinhardtuis hippoglossoides*), halibut (*Hippoglossus hippoglossus*), catfish (*Anarhichas lupus*), salmon (*Salmo salar*), lumpsucker (*Cyclopterus lumpus*), herring (*Clupea harengus*), and deep-water prawn (shrimp) (*Pandalus borealis*). In FIGURE 2, a map of Southern Greenland identifies the approximate locations of the major banks. The most important ones are: Store Hellefiske Bank, Lille Hellefiske Bank, Fyllas Bank, Fiskenæs Bank, Dana Bank, and Frederikshåb Bank.

The banks consist of glacial tills which were deposited during the

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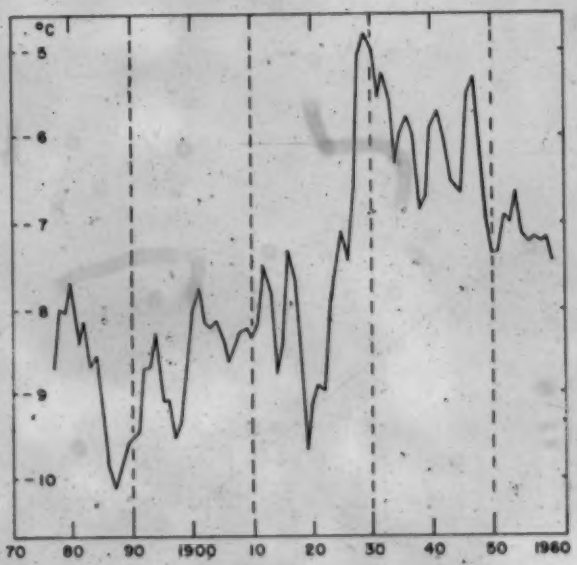
*The cooling trend is also supported on other studies. See M. J. Dunbar, "The State of the West Greenland Current up to 1944," *Journal Fisheries Research Board of Canada*, vol. VI, no. 7 (1946), pp. 460-471.

Fig. 1

TEMPERATURE CHANGES AT UPERNAVIK, 1870 - 1960

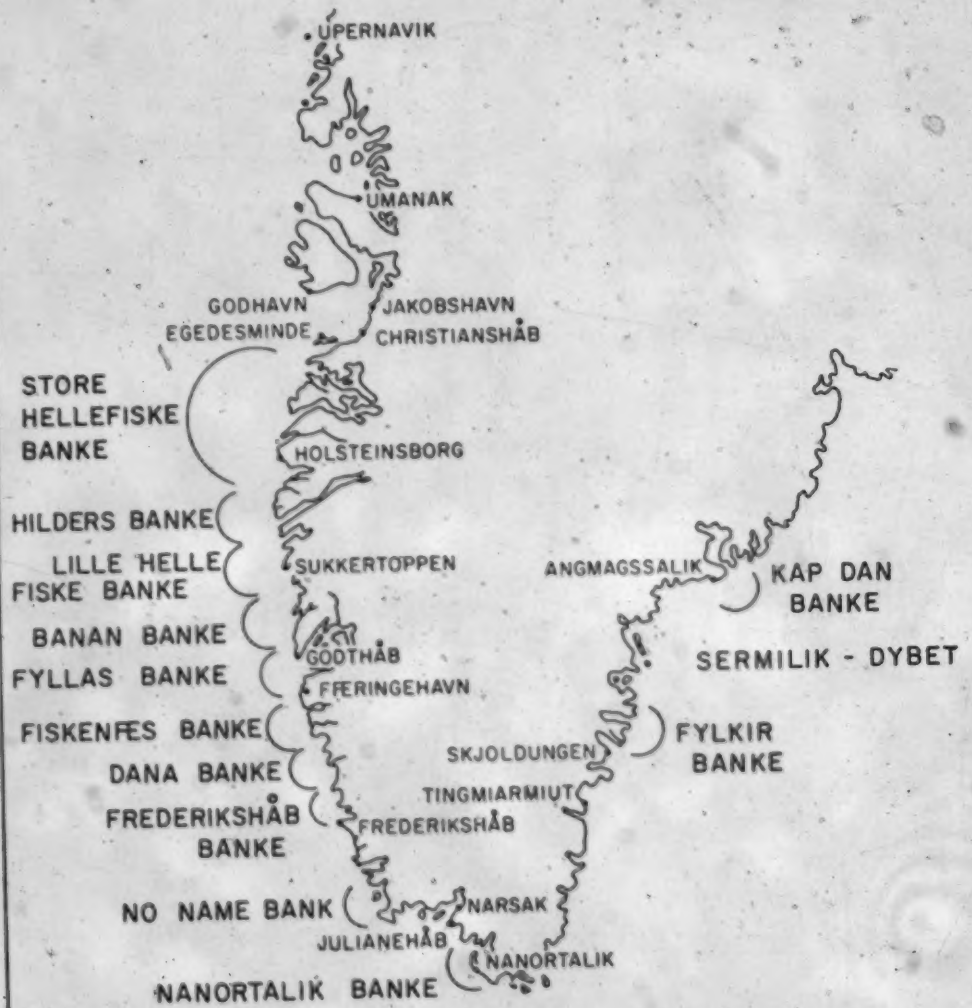


Variation in yearly temperatures at Upernavik, 3-year moving averages of yearly means. Before 1920, temperatures were generally low. Since then, temperatures have been about 2°C higher.

SOURCE: Vibe, "Arctic Animals in Relation to Climatic Fluctuation.", Meddelelser om Grønland V170-5:75.

Fig. 2

MAJOR FISHING BANKS OFF SOUTHERN GREENLAND



SOURCE: Bogen Om Grønland, Politikens Forlag, Kobenhavn: 1970, p. 231

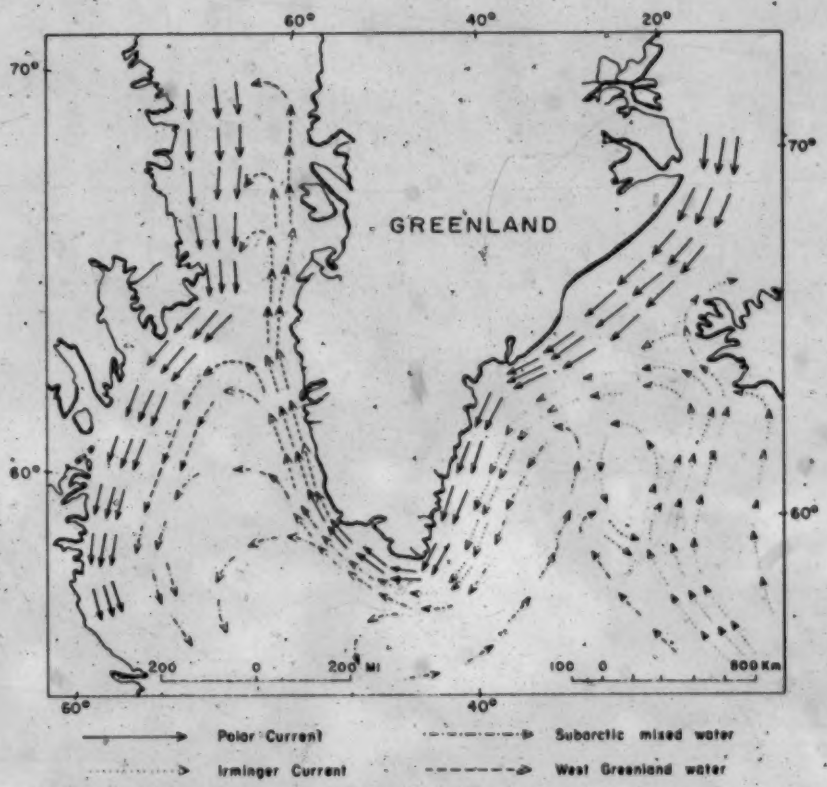
Pleistocene epoch. They vary in depth, being anywhere from 50-100 m (164-328 feet). The surrounding waters are 2,000-3,000 m (6,560-9,840 feet) deep.

The marine resources congregating on these banks are a result of several ocean currents. One of these, the Irminger Current, is a branch of the Gulf Stream. Originating as a type of counter current somewhere between Scotland and Iceland, it flows west towards Greenland on the south coast of Iceland. Off Southwest Greenland, it meets the East Greenland Current flowing south along the East Greenland coast. The East Greenland Current is very cold, receiving its water input as part of the larger Arctic Ocean exchange system. An injection of relatively warmer water is received in the Greenland Sea from a current of Atlantic water originating in the vicinity of Svalbard. Near Scoresby Sund, in Denmark Strait, a 500 m (1,640 feet) high ridge blocks much of this water. (The approximate depth of water throughout much of the Greenland Sea and Denmark Strait is between 1,000 and 2,000 m [3,280 and 6,550 feet]). Therefore, the depth of water above the ridge is between 500 and 1,500 m (1,640-4,920 feet). The small amount of warm water and colder surface waters that do pass over this ridge form part of the Irminger Current with the East Greenland Current component lying leeward of the relatively warmer waters. See FIGURE 3.

Flowing south along the East Greenland coast to Kap Farvel, the earth's rotation deflects the current northward into Davis Strait. Here, the Irminger and East Greenland currents mix. As the stream moves north along the West Greenland coast (now known as the West Greenland Current)

Fig. 3

MAJOR OCEAN CURRENTS AROUND GREENLAND



SOURCE: HANSEN, Paul M., Frede HERMANN. "Fisken og Havet Ved Grønland" Skrifter Fra Denmarks Fiskeri-og Havundersøgelser Nr. 15, 1953. p. 8.

it takes on the properties of a relatively warm water current. Considerable warming of surface water takes place by the sun. The effects are often felt right down to the tops of some of these banks. FIGURE 3 shows directions and mixing of the major currents.

In some years the velocity of the cold water current may be sufficient to move up onto the banks from lower depths and thereby interrupt warming processes from above. The importance of this cold water component within the West Greenland Current, should not be underestimated. Generally, when it is high, fish stocks are adversely affected. Cod, especially, are extremely sensitive to temperature. A temperature change of one degree (°C) is enough to drive fish off to other waters (Hansen and Hermann, 1953, pp. 20-22).

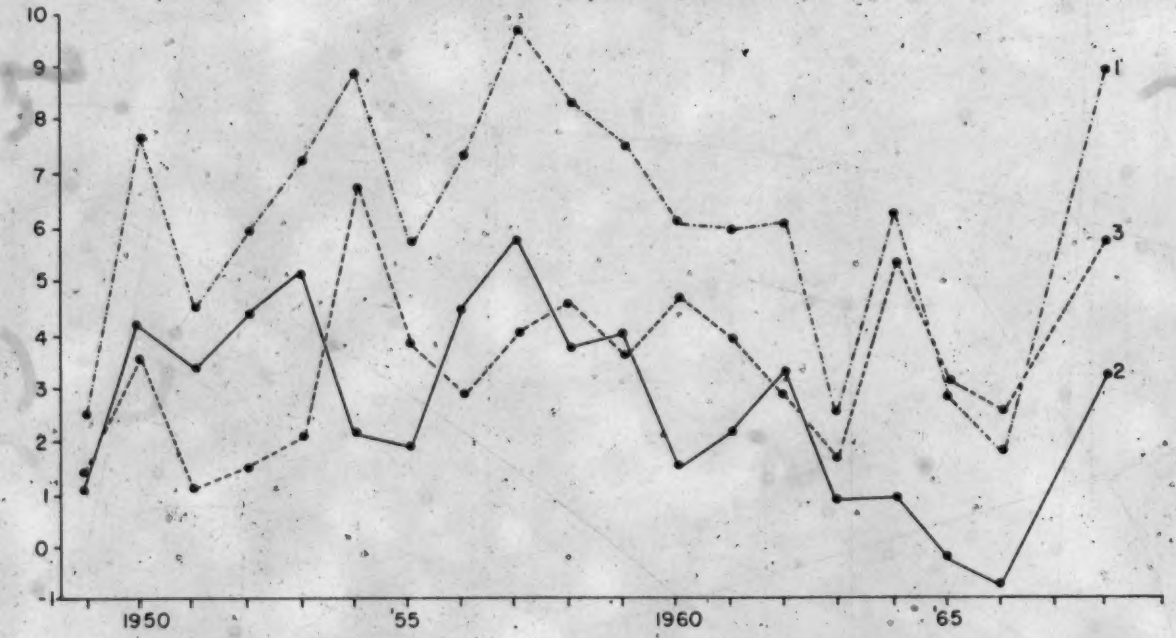
In FIGURE 4, the relationship between discharge intensities at Kap Farvel for the colder (East Greenland) and warmer (Irminger) components of the West Greenland Current is shown. Attention is directed to lines two and three and the alternating strength between the two lines over the years. With such erratic injections of waters with different temperatures, the effect on fish stocks becomes equally erratic.

The ocean currents also serve as vehicles for moving sea ice. Sea ice affecting Greenland may be divided into three groups: *Storis* (pack ice), West ice, and icebergs. The *Storis* is the most troublesome and has the greatest impact on the economy of Greenland. This ice, formed in the arctic basin, is usually more than 3 m (20 feet) thick and several years old.

The East Greenland Current moves *Storis* south to Kap Farvel where

Fig. 4

DISCHARGE FLUCTUATIONS IN WARM AND COLD WATER AT KAP FARVEL, 1949-1968



Fluctuations in discharge of the West Greenland Current (1) and its East Greenland (2) and Irminger (3) components on the Labrador-Cape Farewell section, 1949-1968

SOURCE: Alekseev, A.P., B.P. Kudlo, V.N. Yakovlev, A.F. Fedoseyev, and A.A. Borinov, "Some aspects of water circulation in the Northwest Atlantic, 1960-1969", Symposium on Environmental Conditions in the Northwest Atlantic, 1960-1969, (Special Publication No. 8), International Commission for the Northwest Atlantic Fisheries, Dartmouth, N.S., 1972, p. 151.

it is then guided on a northward course by the West Greenland Current. Configuration of the coast allows for a piling up of *Storis* in the Julianehåb Bay region. Past this area, the ice moves seaward leaving relatively open, or ice-free, water north of Frederikshåb.

The *West Ice* originates in Baffin Bay and is further reinforced from channels in the Canadian archipelago and through Nares Strait. As early as October, much of the northwest coast is already choked with West Ice. By December or January it has reached Egedesminde and, in some years, moves as far south as 66°N, i.e. around Holsteinsborg.

The bulk of the icebergs in Greenland waters have their source areas in two places: Northeast Greenland and West Central Greenland. The number of icebergs coming out of East Greenland are few compared to those originating in Northwest Greenland. Most of the East Greenlandic icebergs are driven around Kap Farvel, but some are also carried south into the Atlantic shipping routes. In West Greenland, thousands of icebergs are "calved" from glaciers located at Jakobshavn, Torssukátak, Umanak Fjord, Karrats Fjord, and several places in Upernavik commune. Most of these icebergs are eventually grounded on the banks or in shallow waters near land. It is estimated that about 400 Northwest Greenland icebergs, or $^{1}/_{20}$ of the total produced, reach the south-flowing Labrador Current which carries them to Newfoundland waters (Trap, 1970, pp. 63-67).

As has been noted, it is the *Storis* which causes the greatest difficulties, for both normal sea transportation and fishing. Many places on the east coast are almost impossible to reach at any time of the year, while places on the southwest coast are blocked only at certain times

during the year. Under conditions of dense pack ice (*Storis*), fishing boats are not only restricted in their movements but, in addition, often suffer heavy losses in fishing nets, trawls, and other types of gear. Unfortunately, neither the arrival nor density of *Storis* on the west coast can be predicted with any degree of certainty.

Arrival of *Storis* at Kap Farvel signals the commencement of a blocking period on the southwest coast. The arrival date cannot be determined with any great accuracy. It has arrived as early as November 21 and as late as May 20. The average arrival date is January 23. This results from recordings of arrival dates at Kap Farvel based on a 60-year period. TABLE 2 shows the distribution of *Storis* arrival dates from November to May for the period 1900-1959.

Once the *Storis* has passed Kap Farvel, it continues to assert limitations on movements in the waters off West Greenland. FIGURE 5 records observations of *Storis* in West Greenland waters by month of year and total number of years for the period 1900-1956. It can be seen that fall and early winter are periods relatively ice free in West Greenland waters.

Local fast ice conditions, especially fjord ice, hinders boat movements in Frederikshåb and Godthåb communes. In Sukkertoppen and Holsteinsborg communes, fast ice conditions vary from year to year. In some years, Sukkertoppen commune is virtually free of any fast ice. In other years when fast ice is present, it is often broken up by winter storms.*

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*For a more detailed review of various physical aspects of Greenland's geography, see Børge Fristrup, ed., "Physical Geography of Greenland," *Folia Geographica Danica*, København: C. A. Reitzils Forlag, 1961, 234 pp.

TABLE 2

Storis Arrival Dates at Kap Farvel

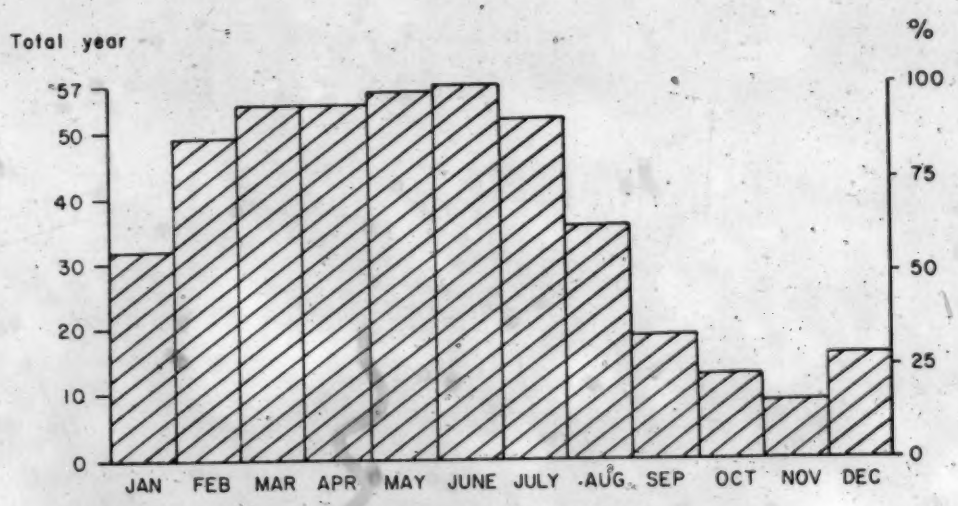
1900—1959

Period		Number of Occurrences
1-15	November	0
16-30	November	3
1-15	December	6
16-31	December	2
1-15	January	14
16-31	January	11
1-15	February	15
16-28	February	4
1-15	March	2
16-31	March	2
1-15	April	0
16-30	April	0
1-15	May	0
16-31	May	1

Source: *Betænkning . . . udvalg vedrørende Beseilling af Grønland*, 1959, p. 128.

Fig. 5

MONTHLY FREQUENCIES OF STORIS IN WEST GREENLAND WATERS, 1900-1956



The shaded bars show the Total number of years for each month within the period 1900-1956 in which ice has been observed off West Greenland.

SOURCE: Betaenkning ... Udvalg Vedrørende Besejling af Grønland, 1959; p. 128.

In a subsequent chapter, more attention will be focused on the relationship between the West Greenland Current, maximum extent of the *Storis*, and the resource base.

DANISH DEVELOPMENT POLICIES BEFORE 1950

The Early Years

Danish attitudes toward development of Greenland and particularly relationships with Greenlanders, have been characterized by fairly consistent and uniform policies. The basis for such policies has its roots in the original decision to colonize Greenland under Danish direction.

It had been well known that Norse peoples who settled in Greenland around 1000 AD had lost contact with Europe by the end of the fifteenth century. It is not entirely clear why this happened, but climatic deterioration, an interruption in shipping from Europe due to political causes, possible conflict with Eskimo peoples, and finally, miscegenation with the Eskimos have all been advanced as hypotheses (Marcus, 1951/1955, pp. 71-80; Gad, 1970, p. 273).

In any case, by the early eighteenth century an evangelical movement within the Scandinavian Lutheran church was underway to re-establish contact with descendants of the old Norse colonists (Gad, 1973). The purpose was to re-Christianize those descendants of the earlier settlers. With some limited financial help from the royal house of King Frederick IV, a settlement was secured near present-day Godthåb. The main financial backing, however, came from a trading monopoly granted to a group of Bergen merchants. The leader chosen for the expedition to Greenland was

Hans Egede, a Norwegian cleric who was in the forefront of the evangelical movement to rediscover the old Norse in Greenland.

For about a decade prior to establishment of this first settlement in 1721, Egede had petitioned the king requesting a "call" to Greenland.* The Danish government, reluctant to underwrite such a missionary effort, solved the dilemma by giving royal assent to the Bergen merchants. Egede had not only been active in organizing these merchants, but was also a shareholder in their company.

It was planned that activities of the company—especially a perceived demand for whale oil on the European market—would subsidize and support missionary activities. It was stated that missionary activities were the primary reasons for a Danish presence in Greenland. Unfortunately, whale oil production failed to materialize. In modern day jargon, the explanations would entail a lack of sufficient capital, difficulties in maintaining production flows, and some rather intense competition from Dutch traders. By 1727, the Bergen company announced its intention to cease trading activities in Greenland.

The mission continued to receive support from the Crown, in part, because of the moving appeal that Egede made to the new and pious King Christian VI. The government, in the meantime, searched for someone willing to assume responsibility for commercial activities. A Copenhagen

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*At this time, Norway was part of Denmark and ruled by the Danish king in Copenhagen. The king traveled to Norway on a regular schedule to hold court. Oslo, the present capital, was in fact built by a Danish king. The original name was 'Christiania,' after King Christian IV.

merchant, Jakob Sewerin, was persuaded to take over the "Greenland trade" in 1734. Government involvement increased and included numerous grants, tax concessions, and international diplomacy to prevent Sewerin's trading accounts from showing a loss.

Nevertheless, Sewerin could not make a profit. Conflict between trade and mission aims, petty swindling by company traders in Greenland, and a continual lack of sufficient investment capital forced him to surrender his charter in 1749. His assets were purchased by the Royal Chartered General Trading Company, a government-organized corporation designed to centralize all *foreign* trade with Denmark. This was meant to include the Icelandic, Faroese, and Northern Norway (Finmark) trades. During the ensuing years, the General Trading Company expanded the number of settlements along Greenland's west coast, was successful in encouraging Danish diplomatic efforts to force out Dutch traders,* attempted a vigorous whaling industry, and experimented with other possible commercial endeavours. These included fish, ivory products, and eiderdown collection. Mineral exploitation—particularly of coal deposits on Disko Island—were considered as well as marble which was known to exist. Some interest was shown in the possibility of creating a type of cottage industry based on domestic production of soapstone articles.

Whether through apathy, lack of adequate information for decision-making, or lost reports within the bureaucracy, all these other possible

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*Other nations trading along the West Greenland coast included the English, Germans, and Dutch. The Dutch were the most numerous and vigorous in competing with the Danes during this period.

commercial endeavours failed to become significant items in the Greenlandic trading accounts.

Mention of some regularity in cycles of climatic change has been pointed out previously. It appears that at this time, the climate was much colder than it is at present. This is thought to be the case since sealing—and the availability of seals—was the most significant fact of economic life in Greenland. Under warmer conditions, seals retreated northward into Baffin Bay. In the mid-eighteenth century, sealing then, represented the most significant economic fact in colonial Greenland.

Perhaps the most important accomplishment for the period was renewed diplomatic negotiations which finally led to Dutch recognition of Danish sovereignty in Greenland. This paved the way for a systematic exclusion of Dutch trading interests from Greenland because, as new settlements were founded, Danish law prohibited foreign traders from landing any closer than 95 km (60 miles) to a settlement. FIGURE 6 shows this progressive extension of Danish sovereignty.

By 1774, the company began suffering heavy losses due to poor whaling conditions. It was felt that assets, mainly in "book values," could be used as collateral for a new loan from a major government-controlled bank. However, the Cabinet, fearing that too much pressure would be placed on the banking system, issued an order in May 1774, abolishing the General Trading Company. All outstanding shares of stock were purchased by the government.

Inasmuch as the Greenland whaling trade appeared promising, it was decided to separate Greenland trading activities from the other

Fig. 6

EXTENSIONS OF DANISH SOVEREIGNTY IN GREENLAND 1740-1776

Eighteenth-century Greenland. By a decree of 18 March 1776, the hitherto open stretch between Umanak and Upernavik was formally closed. Stippled shading indicates closed territorial waters.

SOURCE: Finn God, History of Greenland II: 1700-1782, p. 193.

foreign trade areas. Thus, on January 1, 1776, the Royal Greenland Trade Department (Den Kongelige Grønlandske Handel [KGH]) was organized as a Crown corporation. In order to ensure complete control of all of Greenland, a proclamatio , issued on March 18, 1776, stated the following:

1. That Denmark had a trading monopoly with all Greenland settlements from 60°N to 73°N and any future settlements established beyond these boundaries.

2. No foreigners or Danish nationals were allowed to trade either in the open sea or elsewhere with native Greenlanders.

3. It was forbidden to steal from, kidnap, or use force against any Greenlander.

4. A non-KGH ship could only put into a settlement in case of emergency (Finn Gad, 1973, p. 382).

The importance of these statements is that it served notice, once and for all, that Denmark was closing Greenland to contact with the rest of the world. Visitors, unless seeking entry for scientific purposes, were usually turned away.

These two cornerstones of Danish policy in Greenland, the Monopoly and 'closed-shore,' remained in force until 1950.

Major Development Issues

After 1776, with government in control of all activities, attempts to realize a clear profit were made. Investment in whaling operations continued. Unfortunately, yields were low and the ledgers once again showed disappointing results. Frustrated, the government now decided to undertake a thorough review of the whole Greenland experience with a view towards making some long-term policies. One immediate result was

the division of Greenland into two Inspectorates, one in the north and one in the south with the boundary falling between Holsteinsborg and Sukkertoppen.

By 1782, a series of "instructions" for future policy had been formulated. Two basic principles were to be noted:

1. A standardization of administrative practices throughout Greenland;

2. A statement that sought to develop means by which Greenland's native population could be protected.

Some of those means subsequently developed included types of punishment for Danish civil servants, standards for fair bartering procedures, conservation laws, terms for providing aid when food was scarce, and encouragement of the hunting economy.

A most important principle involved the rate for KGH purchases of raw materials. In all of Greenland, one common price prevailed for goods sold to the Monopoly, i.e. KGH. Similarly, a common pricing system existed on consumer goods in all retail outlets.

Difficult economic conditions in Denmark were also experienced in Greenland during the first quarter of the nineteenth century. By 1835, Denmark was in the midst of recovery. Danish trading accounts with Greenland began to show a profit and this started a series of periodic agitations for free trade on the part of the Danish merchant class. A royal commission discussed this possibility in a report issued in 1840. The minority position argued that controlled prices bred a sense of ". . . torpor and lack of enterprise . . ." (Sveistrup, 1949, p. 75)

among Greenlanders. Denmark, it was further argued, was entitled to profit by possession of the colony.

The treasury ministry and the king were reluctant to adopt any new and radical changes. What emerged instead was a statement that at some future date the Monopoly would be abolished. It was also decided that in order to avoid criticism about the cost of administering Greenland, future operating budgets would be held separate from Danish national accounts. The principle that Greenland should be financially responsible and not an economic burden on the Danish state, appeared for the first time.

The existence of the Monopoly continued to be a vexing issue. It was attacked in 1851 and again in 1863. Alternative strategies for phasing out the monopoly trade could not be agreed upon with the result that the issue died, not to reappear again until early in the twentieth century.

A major reason for a decline in criticism was the appointment, in 1855, of Dr. H. J. Rink as Inspector for South Greenland. He presented strong arguments for understanding the Greenlandic mentality as a means for increasing economic development. Under his direction, he sponsored a monthly periodical in 1861, in the hope that Greenlanders would be more informed. In 1862, he organized "management councils" in each settlement. They consisted of not only Danes but also of responsible Greenlanders. Any trading surpluses were disposed of by these councils, awarding grants for equipment and supplies to the better hunters.

These reforms were part of what Rink considered to be the major

purpose of Greenlandic policy:

> . . . the economy should form the basis of a display of personality, not, as elsewhere, serve to ensure an increased benefit . . . (Sveistrup, 1967, p. 34).

Rink envisioned his scheme as a means of educating the Greenlandic populace for eventual entry into a more complex economic world. As one example of this approach, seal oil prices paid to Greenlanders were gradually increased in order to create a feeling of production and accomplishment within the Greenlandic community. Prices on the *world market*, however, continued to fall with the introduction of kerosene as a lighting fuel. Rink, nevertheless, found popular support in Denmark for his views and consequently his practices represented a more enlightened approach for developing the human resources in Greenland.

By the turn of the century, Rink was gone (he had retired in 1882) and the old demands by free traders and cost-conscious critics of the Monopoly surfaced again. A new commission was formed in 1900. Amongst topics debated were a price regulating fund to prevent fluctuations in prices paid to Greenlanders for raw materials, more rational business methods within KGH, and a proposal to separate trading activities from administrative necessities in calculating the cost of governing Greenland.

Although there was very little in the way of any actual changes, what became more clear as discussions continued was that because of a fickle resource base in Greenland and the primitive nature of the population, free trade was a dead issue. The responsibilities of supplying basic commodities, avoiding spatial discriminations in commercial operations, and affording some protection against world-wide

market saturations (and hence falling price levels), were all simply too important to trust to the private sector.

The 'free-trade-for-Greenland' proponents did make one final attempt in 1920. Since previous reports had categorically stated that at some future date the monopoly trade should be abolished, guidelines for phasing out the Monopoly were proposed.

The "Greenland question" was finally settled by passage of the Act of April 18, 1925. The division of North and South Greenland as administrative units with governors and elected councils was confirmed. District councils were also created which represented another administrative organ between local management councils and the larger division councils. These district councils gave loans and grants for housing, economic development, and other types of social aid.

The most important fact about the 1925 Act, was a reiteration of the notion that Greenland must continue to be financially responsible to the central government for any economic development projects.* The position had already been stated in the 1835 Commission Report, but now it became a legal necessity. The only sector in the accounts, fiscally free from responsibility for Greenlandic financing, was old age pensions and support. The Danish government assumed this responsibility.

Having stated that Greenland should be economically developed,

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*In the 1930s, a government directive prohibited expenditures of no more than 200,00 d.Kr. per annum. These monies also had to be invested in those activities where the return would be greatest. See Paul Peter Sveistrup, "Grønlands økonomi før 1940," *Grønland 1964*, No. 6 (June), p. 232.

the fact was that little long-term financing could be carried out due to the demanding 'pay-as-you-go' fiscal policy. Thus, for example, while commercial quantities of cod made their appearance in Greenland waters after 1910, it was not u til 1923 that KGH began purchasing cod for salting at selected places along the coast.* Not until 1939 were salt-fish production facilities installed at all settlements along the coast. (At Holsteinsborg, in 1914, a small processing plant was built which was converted to a cannery in 1924.)

Most of the fishing at this time was from small, open boats using hand lines or long lines. Within the skerries and fjords these boats received protection from the sea. Cod often can be found in these waters because the capelin (*Mallotus villosus*), a major item in the cod diet, are moving towards these shallower waters in the early summer, i.e. May or June. The hand lines utilized often ran to several hundreds of meters in length. At intervals of every 1-2 m (3-6 feet), four to eight hooks were distributed. Most fishing took place in the summer when cod were lying in surface waters and close to the shore. In the fall, the cod moved to deeper, warmer waters on the banks. Some fishing was possible at this time. Long lines were then used with weights attached so that the line could sink to a desired depth. Capelin was used as bait.

It was only after World War II that motorboats were introduced and this made possible an extension of the long line to many hundreds of

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*The drift ice stages discussed previously are consistent with the observation that a slight warming of the waters made possible not only large incursions of cod, but was probably responsible for more successful maturation of eggs.

meters with between 4,000-5,000 hooks attached. In the last 15-20 years, the pound net (similar to a purse seine) has been introduced as an alternative to close inshore fishing from small boats.

Fall, then, was a time for splitting, drying, and salting cod at many places along the coast. The rich fishing banks were usually not accessible to the small motorboats because of the weather, rough seas, and the fact that the distances involved were often beyond the range of small, open boats. These factors were symptomatic of the crippling effects the lack of deficit financing imposed in developing a modern cod fishery in Greenland.

This conservative investment policy should be noted in other sectors outside the harvesting of marine resources. Coal mining only began at Kutdligssat in 1924 and marble quarrying in Umanak district in 1933. Yet, existence of these deposits had been known for many generations. The climatic amelioration that brought cod to Greenland waters also made it possible to consider bringing sheep to the land. Investigations as to breeding and feeding possibilities were begun in 1906, but not until nine years later was the first sheep station organized in Julianehåb commune.

Justification of an Economic System

Probably no other issue in all the Danish discussion about Greenland has caused as much debate and polarized views as the state monopoly. As has been noted, Denmark attempted to make a profit out of Greenland throughout most of the eighteenth century. This was, of course, typical mercantilist economics that dominated thinking during this period.

Most of this early investment was lost.

The mission, or conservative state Lutheran church, continued its evangelical activities. Some of the early missionaries, such as Paul Egede (the son of Hans Egede) were influential spokesmen on behalf of the Greenlanders' welfare. As the church, or mission, became more and more institutionalized in eighteenth century Greenland, its aims were often in conflict with the Monopoly. On balance, it can be said that the mission, or church, was more successful in its aims than the Monopoly, or KGH.

The mission, along with some individuals from the Monopoly, helped mould the unique Danish attitude towards Greenland. KGH evolved as an instrument to hold down administrative expenses. It became the vehicle for maintaining the spirit of Hans Egede's original scheme that the trade, i.e. economic activities, was a means to an end and not an end in itself.

One argument that has been advanced as to why, in a very general sense, Denmark would not "free" the economy, is the experiences she had with other overseas colonies. Possessions on the Guinea coast, in the West Indies, and in India proved too expensive to maintain. To prevent this pattern from repeating itself again, sustaining the government monopoly may have been considered a means by which large scale economic failures could be prevented. Administrative costs and economic development could be monitored very closely when these sectors were under strict government control.

It should also be remembered that in these formative years of the Danish presence, the royal court was influenced by writings of the French philosopher, Rousseau (Jenness, 1967, p. 30). The concept of the 'Noble

Sava[illegible] was an important influence behind paternalistic attitudes of the mission and various government directives.

The Monopoly, though, played an even more important role in maintaining the spatial structure of the economy. With sealing as the major production effort, it was not only imperative that populations be dispersed, but even that many settlements be ephemeral.* A dispersed and mobile population could keep up with periodic distribution shifts in the seal stock. The Monopoly was prepared to service such a dispersed and/or mobile population at the point of production.

If too many hunters gathered in one place, they ran a risk of depleting local seal stocks. This would necessitate longer hunting forays with all the added perils of being away from home in an unfamiliar territory for an extended period of time. Clearly, if the hunter suffered some misfortune, his family had to be taken care of by the mission. This would eventually be reflected in greater demands for support from the Monopoly. For this reason, the Monopoly viewed with alarm any tendency towards population concentrations.

It was felt that private traders would not be willing to maintain a dispersed population of Greenlanders. Indeed, this very aspect of the monopoly system, i.e. the maintenance of a dispersed population, was attacked in the commission report of 1906. A proposal put forward

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*The logistics and expense of administering and providing other important services can be appreciated in a land where all transportation was by boat—often under hazardous conditions. See Naomi Jackson, "With the Doctor Boat Along the Greenland Coast," *Geographical Review*, Vol. 33, No. 3 (October 1943), pp. 545-568.

suggested that the then existing twelve major settlements be reduced to four and these four settlements would service other trading posts. It was argued that the more costly Danish labour could be reduced and replaced with cheaper Greenlandic labour. Along with other rationalizing changes, a saving of 84,000 d.Kr. could be expected.

As the principle of a 'pay-as-you-go' fiscal policy became more firmly established, it complemented the policy of protecting the Greenlander from the harmful effects of civilization. Thus, Greenlanders should be encouraged to adhere to the traditional hunting and gathering economy. In short, they should live as close to nature as was possible.

Although the 'pay-as-you-go' policy theoretically meant that the Greenlandic retail price for any imported article would be cost price in Copenhagen plus transport charges to the point of consumption, this was not the way the system actually operated (Seveistrup, 1947, p. 176). The price policy, originally set forth in the 1782 "Instructions," instituted the principle of using fixed prices on consumer articles for a period of time (usually five years). The authorities considered the 'degree of utility' an article had for the consumer. In practice, this meant that commodities were divided into three categories: (1) those deemed most necessary for the general welfare, (2) those which were judged as being less necessary, and (3) those goods classified as luxuries. Two examples can be cited here to demonstrate how the system worked.

Around the middle of the nineteenth century, the Greenland Administration determined that the earth and peat huts that many Greenlanders lived in were unhealthy. It was decided, therefore, to encourage wooden

houses in lieu of these primitive abodes. Wooden houses were constructed and shipped to Greenland in pre-cut sections ready for assembly.

The house in Denmark cost 250 rigsdalere (1 rigsdaler = 2 kroner) with an additional freighting charge of 120 rigsdalere (240 kroner) per unit. A barter system in use in Greenland at this time equated a barrel of blubber as being equivalent to 3½ rigsdalere (7 kroner). The Administration charged 16 barrels, or 56 rigsdalere (112 kroner). Similarly, stoves which cost the Administration 45 rigsdalere (90 d. kroner) F.O.B. Greenland, were sold for 10½ rigsdalere (21 d. kroner). Greenlanders only paid 15 per cent of the real cost for houses and 23 per cent of the real cost for their stoves.

The reverse situation can be seen operating when applied to luxuries. Cigarettes, introduced commercially into Greenland around 1930, quickly became items of high demand. As a 'luxury' item, the Administration not only doubled the price, but severely restricted the number of cigarettes imported. TABLE 3 shows the effect of both a high price followed by a quota on per capita consumption of cigarettes in Greenland for the period 1930-1939.

Although the policy and its actual implementation seemed contradictory, it was made necessary by unfortunate experiences in the previous 100 years. In the Julianehåb commune, the effect of introducing coffee was observed. The Greenlanders enjoyed coffee so much that they sold all their skins, even depleting a reserve supply necessary for tents and *umiaks* (boats). Production was adversely affected because without skins for tents or boats, their mobility was greatly restricted. Little wonder,

TABLE 3

Per Capita Cigarette Consumption

1928—1939

Fiscal Year	Number of Cigarettes
1928-1929	16
1929-1930	72
1930-1931	100
1931-1932	81
1932-1933	84
1933-1934	87
1934-1935	56
1935-1936	76
1936-1937	70
1937-1938	77
1938-1939	59

Source: *Sammendrag af Statistiske Oplysninger om Grønland, IV*, p. 861.

then, that in Greenland throughout much of the early colonial period, the expression, "The trade has gone to serve the coffee pot," was heard with considerable frequency. It points up the difficulties of adjustment for a basically primitive people in their interaction with western European society.

When the cultural level of the Greenlander was considered and his difficulty in evaluating his own future needs, the anti free-trade sentiment on the part of the government was understandable.

POPULATION DISTRIBUTION

There is only fragmentary evidence of the population size in Greenland during the eighteenth century. Distribution—or lack of—was a constant problem that the Danes struggled with at this time. Moravian missionaries, who came to Denmark in 1733 and remained in Greenland until 1900, were particularly guilty of encouraging clustered concentrations of peoples in order to preach their doctrines more effectively.

The historian, Finn Gad, attempted to extrapolate the population of eighteenth century Greenland from population sizes of several settlements. He comes to this conclusion:

> These random figures [from several various settlements] do not help us to calculate the size of the whole population in the eighteenth century, which one can only assume from correspondence and reports to have been declining. One can only guess at the causes of this. The fluctuation in trapping conditions may have resulted in deaths at particular places. . . . If there were too many people relative to what might have been caught, it was, if not a disaster, still a source of impoverishment. Epidemics, of course, were a frequent threat (Gad, 1973, p. 313).

The first recorded population available for West Greenland is for 1805. In that year, the population was 6,046. By 1840, it had increased to 7,877 or by 30 per cent. In the next 20 years (1840-1860) the total had risen 1,871 or 22 per cent. Only 22 people were added to the population total for the period ending in 1880. By 1901, the population was 11,190; for 1911, 12,510; for 1921, 13,401; for 1930, 15,345; and for 1938—the eve of World War II—16,969.

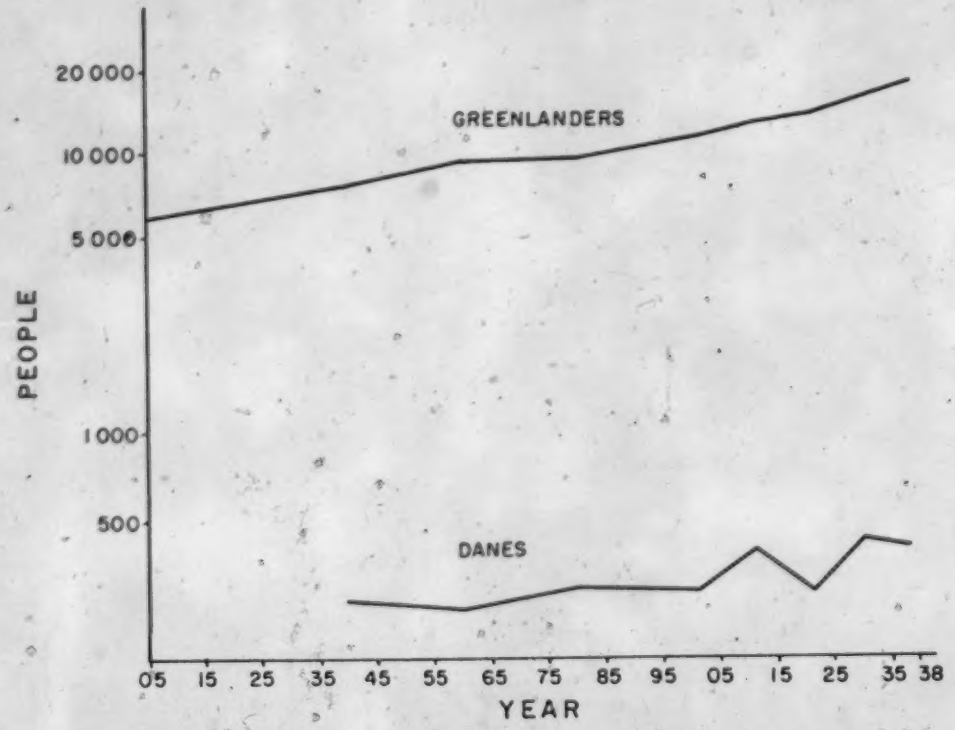
From these figures it is clear that in the latter part of the nineteenth century and early years of the twentieth century, there was little population growth. The percentage growth for the period 1880-1901 was 15 per cent. For subsequent periods (see above) percentage growths were 12 per cent, 7 per cent, 15 per cent, and 11 per cent, respectively.

FIGURE 7 indicates the growth of Greenland's population. Since the turn of the century, i.e., 1900, there has been steady growth. Prior to that time, growth was very slow. The number of Danes in Greenland reached its prewar maximum number of 408 in 1930. In 1938, the number was 391. These Danes represented the civil service and employees of KGH.

There were 9,361 people in Southwest Greenland in 1938. That figure includes the population in Julianehåb (Narssak and Nanortalik were not designated as communes at this time) and the four 'Open-Water' communes. North Greenland included the commune of Egedesminde, Christianshåb, Jakobshavn, Godhavn, Umanak, and Upernavik. The population of these six communes was 7,608. These regional populations are depicted in FIGURE 8.

Fig. 7

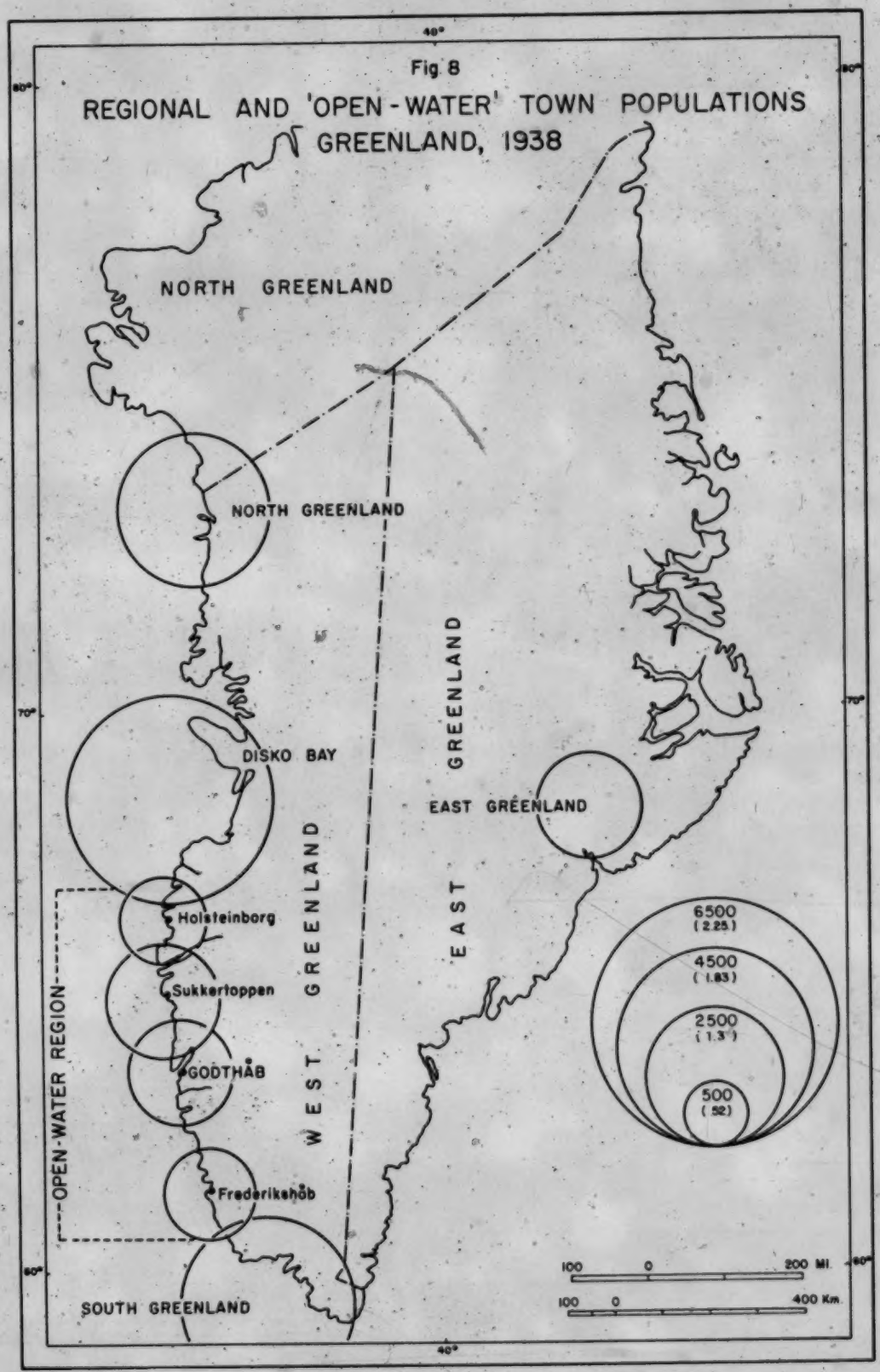
POPULATION GROWTH IN GREENLAND, 1805-1938



SOURCE: Beretninger vedrørende Grønlands Styrelse, Sammendrag af Statistiske Oplysninger om Grønland, 1942, p. 418

Fig. 8

REGIONAL AND 'OPEN-WATER' TOWN POPULATIONS
GREENLAND, 1938



When the 'Open-Water' region is considered as a unit, its regional population (5,547) was larger than the four other regions. Disko Bay (4,810) ranked second, and South Greenland third with 3,814. North Greenland had 3,069, with approximately equal numbers in Umanak and Upernavik. Thule, at this time, contained only 271 Greenlanders and six Danes. East Greenland had the smallest population, 1,071 divided between Angmagssalik and Scoresbysund.

The most surprising fact regarding the commune populations in the 'Open-Water' region is that Sukkertoppen had more people than Godthåb, the capital of Greenland. Holsteinsborg ranked third and Frederikshåb last. The explanation lies undoubtedly in the fact that Godthåb had not yet grafted on the vast government/administrative sector that was to follow in the 1950s and 1960s.

SUMMARY

Greenland is the world's largest island which has been extensively glaciated. Limited areas of 'nunatakker,' or unglaciated alpine peaks, exist which escaped glaciation. An ice cap still covers 80 per cent of the area and much of the remaining 20 per cent is not suitable for settlement. More than 85 per cent of the population is confined to settlements along a narrow band of the southwestern coast. Within this region, there is today little dispersed population. The 'Open-Water' region, consisting of four communes—Frederikshåb, Godthåb, Sukkertoppen, and Holsteinsborg—has the largest regional population.

Soils in the southwest are poor and offer very limited agricultural

(grazing) possibilities. The climate, too, is harsh, with mean July temperatures not greater than 10°C (50°F). The climate makes real tree growth impossible. There has been climatic amelioration in historic times, but in the recent past evidence suggests a return to colder conditions.

The major ocean currents affecting Greenland are the East Greenland and West Greenland currents. The former is cold, the latter is relatively warm having received its warm component from the Irminger Current, a branch of the Gulf Stream.

The flow intensity of the cold portion within the West Greenland Current, if sufficiently strong, can interfere with warming processes on submarine banks off the West Greenland coast. This has serious implications for dermersal fish species which are important to Greenland's present-day economy.

These ocean currents also move large quantities of *Storis*, or pack ice, which blocks access to the coast and interrupts fishing operations. Therefore, the arrival of *Storis* off Kap Farvel has always been closely monitored because it signals the onset of difficult navigational problems in Southwest Greenland. Late January is the average arrival period.

The original motivation for the 1721 colonization in Greenland was religious. Any economic growth or production was intended to support missionary activities. This principle was maintained throughout the colonial period. Based on prior experiences with other colonial holdings and fearful that administrative costs would escalate, Denmark maintained the government-controlled monopoly—Den Kongelige Grønlandske Handel (KGH).

In 1776, the land was closed to all outsiders and specific rules were later (1782) formulated regarding treatment of Greenlanders. Travel to Greenland required special permission from the Danish government. All consumer prices were set for periods of time as were all purchases of raw materials from Greenlanders. The price system for both purchases and sales prevailed over all of Greenland. Prices were determined not so much by cost plus transportation, but by a sliding scale of real, designated necessities to outright luxuries.

Like the mission, the Monopoly had some far-sighted administrators who understood Greenlandic culture and tried to educate Greenlanders for eventual entry into a market-oriented, economic world. Although this finally came about in 1950, there had always been pressure for a free trade system. Royal investigatory commissions in 1835, 1851, 1863, 1906, and 1920 steadfastly maintained a position that Greenlanders were wards of the state and best protected by the presence of a monopoly.

However, from as early as 1835, deficit financing was denied the Greenland Administration. Undoubtedly, this retarded any possible development of an economic base.

Chapter III

REGIONAL DEVELOPMENT IN GREENLAND

In the previous chapter a review of the physical environment indicates that options for development are extremely limited. The Danish government had, by the beginning of the nineteenth century, appreciated this fact and followed a 'pay-as-you-go' fiscal policy. Up until 1939, Greenland might still be considered as undeveloped. Plans had been made to review the Act of 1925 in the late 1930s, but this was interrupted by World War II.

The war had a profound effect on Greenland because it brought about changes over which the administration in Denmark had little control. Dunbar has summarized these:

— local administrators could act immediately on decisions without waiting for a slow moving bureaucracy in Denmark for decisions. (Pre-World War II colonial Greenland communications were normally exchanged by ship.)

— local Greenlanders felt that they were not treated in as paternalistic a manner in war-time Greenland as seems to have been the case in colonial Greenland.

— native Greenlanders, through contact with Americans and Canadians stationed in Greenland, perceived a new world unto which the Danish Government had not allowed them access.

— the 'closed-shore' policy could no longer be maintained, but at the same time, Greenlanders were aware of their own lack of education for entry into a more commercially

complex and technical world (Dunbar, 1950, pp. 130-133).

A delegation from the two Greenland Provincial Councils travelled to Denmark in November 1945, to discuss future plans for Greenland. Together with a committee from Parliament and another committee from the Greenland Administration, a joint report was issued in the summer of 1946. The topics discussed included, among others: relocating the Greenland Administration to Greenland, creation of only one Greenland National Council (instead of two, one for the North and one for the South), the status of KGH, the 'closed-shore' policy, and the question of equality between Danes and Greenlanders.

It is of interest to note that the commission's report included this statement regarding the Monopoly and 'closed-shore' policy:

> The Greenlandic Delegation has unanimously upheld continuation of the Monopoly as provided by the Act of 1925. Similarly, in line with a necessity for the Monopoly, the Delegation continues to support the ban on foreign ships in Greenland territorial waters and the 'closed-shore' policy. Abolishment of the 'closed-shore' policy would be considered very dangerous in light of the Greenlanders' present cultural and economic development (author's translation). (*Betænkning*, 1946, p. 18).

There is some doubt as to whether this was the real feeling of the Greenlandic delegation. Dunbar has suggested that those discussions and the subsequent report of 1946 did not reflect the spirit for a change prevailing in Greenland at that time (Dunbar, 1950, p. 134). A similar comment has been expressed elsewhere (Porsild, 1948, p. 66). Although several minor changes were made, the general feeling in Greenland was one of dissatisfaction with the report.

Agitation continued both in Greenland and Denmark as a result of

the conservative position taken in the 1946 report. The Greenland National Councils expressed a request for a thorough review of the "Greenland question." Three main wishes were voiced by the Councils:

1) that the existing ban on free entry into the country be repealed,

2) that the Danish government trading monopoly be abolished and replaced by a more flexible system admitting Danish private enterprise to trade in Greenland, subject however, to a certain measure of government control,

3) that the diversified state of law for Danes and Greenlanders be abolished and replaced by a common judicial system (Nielsen, 1951, p. 13).

The government, reflecting the prevalent liberal feeling in Denmark, moved quickly to establish a commission to review these expressed desires. Work began in January 1949, and by February 1950, a comprehensive report of 1,100 pages had been prepared (Hedtoft, 1949, pp. 22-42; 1953, pp. 13-17).

The Commission recommended that the Monopoly, i.e. KGH, be abolished, free trade be allowed, the 'closed-shore' be replaced by free entry, the discriminatory legal system abolished, and the 'pay-as-you-go' policy be replaced by deficit financing. These recommendations (along with several others) were submitted as bills to the Danish Parliament and were quickly passed in May 1950.

The Greenland Commission Report of 1950, often referred to as *Store Kommissionens Betaenkning af 1950*, may be considered as the first of two models for regional development in Greenland.

The Greenland Commission of 1950

The future goals, in terms of economic policy, as set forth by the Commission, included the following:

— An improvement in the Greenlanders' standard of living. This, it was claimed would improve the overall health of the native population and thereby increase productivity.

— A continuation of a price stabilization on raw materials so that native Greenlanders would not be subjected to the effects of market fluctuations in supply and demand.

— Promotion of private enterprise in Greenland, subject to certain restrictions and/or rules as set out by the Greenland Administration.

— An increase in labour force productivity through improved wages and higher prices paid on raw material output.

In order to satisfy these future goals, some fundamental changes were proposed in the geographies of administration, economics, and transportation.

Politico-Administrative Structure

The administrative structure in Greenland consisted of three organs: local councils, district councils, and the Greenland Provincial Councils. Mention was made earlier of the "management councils" which Rink utilized in his efforts to develop a more responsible native population. The Commission of 1906 recommended abolishment of these "management councils" in favour of a commune or local council. (They effectively continued the same functions performed by the "management councils."

District councils (of which there were 13 in Western Greenland) embracing several communes were established by the Act of 1925. The two Greenland Provincial Councils—one for the North and the other for the South—consisted of 12 and 11 members, respectively. Each member was elected at the District level for a term of six years. Each Council had a chairman appointed by the Crown who had final authority. The Provincial Councils could issue reports, offer advice regarding proposed Danish legislation affecting Greenland, and issue local ordinances. Danish legislators considered the Provincial Councils as "sounding boards" concerning any proposed legislation which would affect Greenland.

One of the first decisions of the 1950 Commission was creation of one Provincial Council for all Greenland. The reasoning was that whereas in former times, basic differences existed between the seal hunting economy in the North and the mixed sheep ranching-fishing-sealing livelihoods of the South, these no longer existed. With expansion of the fishing industry into the Disko Bay Region, it became necessary to coordinate activities. Often fishing boats would move from the South to the Bay if there were favourable reports. Sometimes, factories would have unused capacities which could accommodate catches from the South. Rapid communication from a centralized administration in Godthåb could now keep close contact with all settlement, village, and town managers.

The most far-reaching re-organization came about with abolishment of the 13 district councils. Since commune and district councils had come to duplicate their administrative duties, e.g. social relief, aid to the sick, funding projects of economic importance, etc., it was

decided to abolish these district councils. The question, then, was the future disposition of the 66 communes in Western Greenland.

While there was a need for centralization, concern was also voiced that the local government seat should not be too distant from smaller villages and settlements. Accordingly, two possible new commune structures were suggested. In the first, 18 communes were proposed whereby the mean distance between the commune town or seat of local government and the other settlements and villages was calculated as 34.44 km (21.69 miles). In the second plan, a 24-commune division lowered the mean distance to 32.31 km (20.35 miles). The only other alternative was to use the old district divisions in creating 13 communes. The mean distance would be 55.69 km (35.08 miles). These three choices are presented in TABLE 4.

The Commission Report does not indicate any one preference among the three plans. The decision was left up to the Greenland Provincial Council. What apparently seems to have emerged is Plan I (See TABLE 4), but with several additions.

Ivigtut, because of its cryolite contribution to Greenland's natural income, was designated a separate commune.* (It was formerly part of Frederikshåb commune.) Ivigtut is unique not only because of cryolite deposits, but it also includes a small naval station at

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*Cryolite is a mineral used in the production of aluminum, soda, and glass to which it gives a milky hue. Greenland is the only place it occurred and it is now mined out and the stockpile will be exhausted in ten years.

TABLE 4

Suggested Commune Reorganization, 1950

PLAN I			PLAN II			PLAN III		
Commune	Number of Villages*	Mean Distance	Commune	Number of Villages*	Mean Distance	Commune	Number of Villages*	Mean Distance
Egedesminde	7	58.71	Kangâtsiak	3	27.66	Kangâtsiak	3	27.66
Christianshåb	3	30.33	Egedesminde	3	21.00	Egedesminde	3	21.00
Jakobshavn	2	39.50	Jakobshavn	5	42.00	Claushavn	3	45.33
Ritenbenk**	4	51.75	Sarkak	3	39.33	Jakobshavn	1	8.00
Godhavn	3	47.33	K´utdligssat	1	20.00	Ritenbenk	1	21.00
Umanak	7	62.57	Godhavn	3	47.33	Sarkak	1	15.00
Upernavik	6	70.83	Umanak	5	40.20	K´utdligssat	1	20.00
Nanortalik	1	80.00	Nugâtsiak	1	35.00	Godhavn	3	47.33
Julianehåb	6	47.16	Upernavik	5	52.00	Umanak	4	37.00
Frederikshåb	3	72.00	Kraulshavn	-	-	Nugâtsiak	2	54.00
Godthåb	5	61.80	Nanortalik	1	80.00	Prøven	1	28.00
Sukkertoppen	3	67.33	Julianehåb	6	47.16	Upernavik	2	26.50
Holsteinsborg	3	34.66	Arsuk	-	-	Kraulshavn	1	90.00
			Frederikshåb	2	41.00	Nanortalik	1	80.00
Ivigtut***	Σ = 53	Σ = 723.97	Fiskenæsset	-	-	Sydprøven	2	22.00
Narssak***			Godthåb	4	25.25	Julianehåb	3	52.33
Kangâtsiak***		D̄ = 55.69	Sukkertoppen	3	67.33	Arsuk	-	-
Nanortalik***			Holsteinsborg	3	34.66	Frederikshåb	2	41.00
						Fiskenæsset	-	-
				Σ = 48	Σ = 619.92	Godthåb	2	20.00
						Kornok	1	37.00
					D̄ = 110.44	Napassok	1	32.00
						Sukkertoppen	1	68.00
						Holsteinsborg	3	34.66
							Σ = 42	Σ = 775.48
								D̄ = 65.87

Source: *Grønlandskommissionens Betænkning*, Bd. 2, "Politiske og Admistrative Forhold Retsplejen," Bilag 1, 2, 3, pp. 127-133.

*The commune town is not included in the total number of settlements.

**Later redesignated 'Vaigat.'

***Subsequently designated communes.

Grønnedal. Between the two settlements runs a 5 km (3.15 miles) long paved road. (It is the only paved road in Greenland linking two settlements!)

Narssak was separated from Julianehåb commune because of its designation for development. Ritenbenk, later re-designated 'Vaigat,' was important because of the coal mine at Kutdligssat.* Kangâtsiak commune was created including three other settlements from Egedesminde commune, because of heavy population in the old Egedesminde commune. The 1947 population for Egedesminde was 2,477—the second highest in Greenland after Julianehåb with 3,262 people. Narssak's designation as a commune may also represent efforts to re-distribute population in a more regular pattern among communes.

These changes could be accomplished without necessarily encouraging migration, but rather by adjusting or designing new spatio-administrative units. The units, or communes, always had a major *by*, or town, which was considerably larger in population than surrounding *udsteder* (villages) and *bopladser* (settlements).

Of the three choices available, the Greenland Provincial Council (with perhaps advice from Danish planners) opted for a smaller number of communes disregarding expressions of concern about the longer mean distances from the commune *by* to the most remote *boplads* (settlement). Certainly, the cost of administrative units would have increased had the

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*This mine was closed in 1972 because its continued operation was uneconomical. Prior to that date, villages within the commune were placed under administrative control of Jakobshavn commune.

choice been 18 or 24 communes.*

Economic-Industrial Policies

The economic and industrial policies were planned in light of changing environmental, economic, and social conditions. The Commission reviewed these conditions in its report, commenting specifically on depressed regions. Those regions which were most depressed included the Umanak and Upernavik communes, Kutdligssat in Ritenbent (Vaigat) commune, and the Kap Farvel region in Nanortalik commune. There was also some hesitation over designating Godthåb as the capital because of certain site and situation limitations. These will be discussed later. FIGURE 9 shows these regions along with the Plan I commune system as subsequently adjusted.

The most serious problem facing the two northern communes was the declining seal catch. FIGURE 10 shows this gradual decline over a 45-year period. Umanak and Upernavik reflect the impact of climatic amelioration causing seal stocks to retreat farther north. The declining resource is also evident from examining figures for *indhandling* (trading in raw materials) and *udhandling* (sales of consumer goods to Greenlanders) through KGH shops. (See FIGURE 5.)

For the two selected time periods, *indhandling* in Upernavik commune completely stagnated while *udhandling* increased by almost 91 per cent. In Umanak commune the two-thirds increase in *udhandling* was somewhat offset by a 50 per cent rise in *udhandling*. Part of the explanation lies

*West Greenland includes that coastal area from (and including) Upernavik commune to Kap Farvel. North Greenland has one commune, Thule. East Greenland has two communes, Angmagssalik and Scoresbysund. North and East Greenland along with Umanak and Upernavik communes are often referred to as the Hunting Districts.

Fig. 9

DEPRESSED AREAS AND DEVELOPMENT REGIONS GREENLAND, 1950

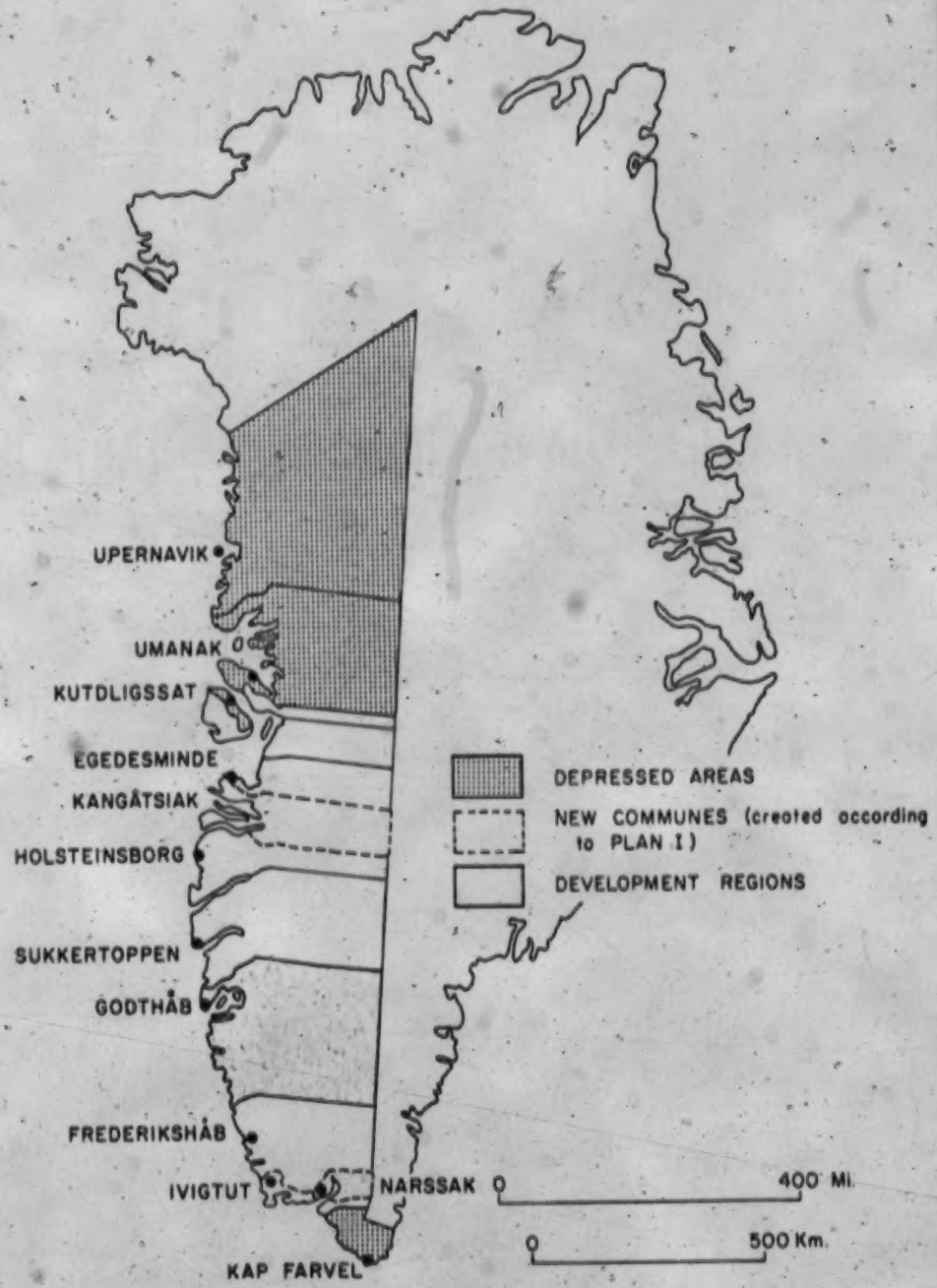
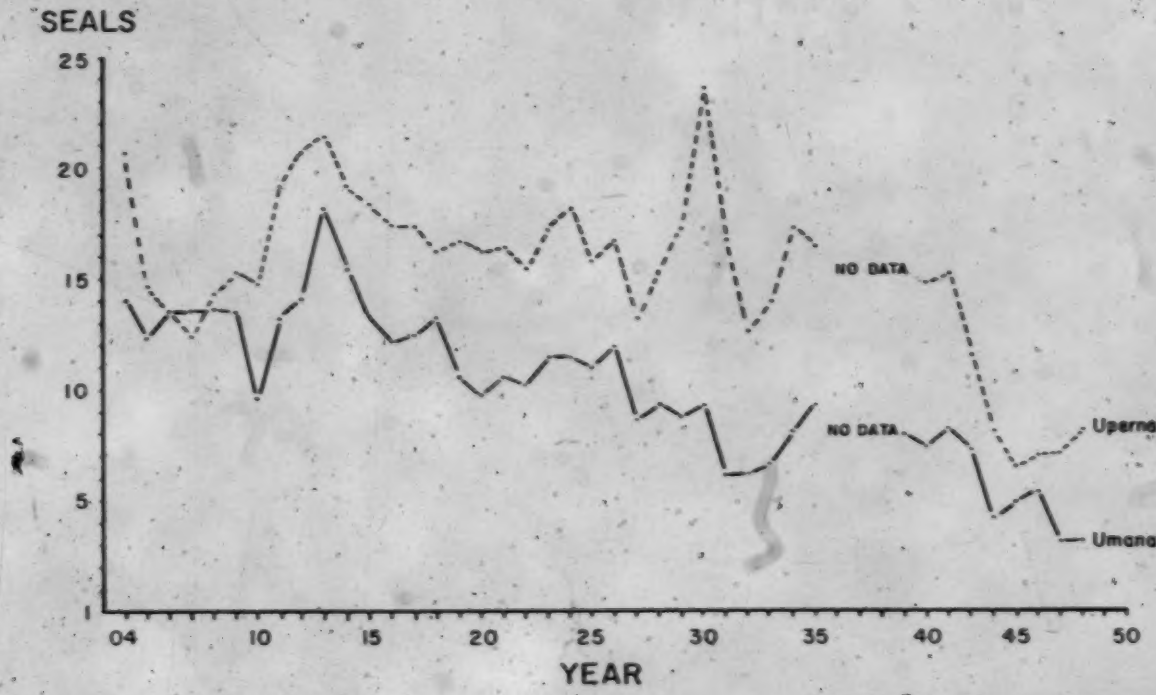


Fig. 10

PER. CAPITA SEAL CATCH IN UPERNAVIK AND UMANAK COMMUNES, 1903 - 1948



SOURCE: "Gronlands Kommissionens Betaenkning I Indledning Placering og UdForming af Bebyggelser Der Fremtige AnlaegsvirKsomhed", p. 29, 33.

in the fact that government, either through KGH or other agencies, employed at least one-half of the work force in secondary production.

TABLE 5

Indhandling and *udhandling* in Umanak and Upernavik Communes

	Per Capita *Indhandling*		Per Capita *Udhandling*	
	1938-1939	1947-1948	1938-1939	1947-1948
Umanak	29.45 kr.	49.02 kr.	163.61 kr.	244.90 kr.
Upernavik	43.53 kr.	43.51 kr.	129.71 kr.	247.01 kr.

Source: *Grønlandskommissions Betænkning, I,* "Indledning Placering og Udforming af Bebyggelser—Den Fremtidge Anlægsvirksomhed," 1950, pp. 32-35.

Many of the "hunters" also were earning a large percentage of their income through wage work. (In colonial Greenland, censuses of occupations were often questionable as to their reliability because many men would list their occupation as *fanger* (sealer)—the mark of a man—even when more than half their income was derived from wage work.)

The seriousness can also be seen in the population growth. In Umanak, the percentage increase from 1938-1947 was 0.2 per cent; in Upernavik, 11.3 per cent. (For all of West Greenland in the 1938-1947 period, the increase was 12.5 per cent.) Although large out-migrations to other communes had occurred, the decrease in population was not reflected in any large absolute increases in per capita *indhandling* which

could be more favourably compared to *udhandling*. (See TABLE 5 above.)

It would also appear that for many years, the government practiced 'make-work' programs in Upernavik and Umanak as a means of supporting the 3,000-odd population. While the Commission Report saw nothing particularly wrong with this policy, the future necessity of more rationalized methods for treating seal skins would have to be recognized in the long term. Therefore, a decision was taken to encourage migration towards the commercial fishing region where better possibilities existed for a more productive type of employment.

In addition to the uneconomic operations created by the disappearing resource base in the sealing districts, another problem that had to be dealt with was the coal mine at Kutdligssat. The mine was located on a stretch of coast where there was no harbour, anchorage was poor, *Storis* was often encountered, and storms were frequent. The lack of harbour and poor anchorage conditions meant that coal had to be lightered out to waiting ships. Although mining operations had been going on since 1924, they had never been profitable.* The mine was kept open as a possible energy source in case Greenland was cut off from other coal sources and as a means of employment for the 1,000 Greenlanders living there.

With the beginning of the Korean War, Danish authorities feared

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*The coal was excellent for household use because it produced little soot and burned at an even, or steady rate. It was ideal for maintaining household temperatures through the night. From 1961-1968 production fluctuated between 20,000 tons and 39,000 tons. In that period from 1961-1968, expenses were 82.9 million kroner, with income from sales amounting to only 58.0 million kroner. This produced a deficit of 24 million kroner (Lauritzen, 1974, p. 24).

that if the conflict spread, future coal deliveries might be jeopardized. Therefore, a date for the closing could not be established. By 1957, there was apparently re-consideration of the profitability of the mine. Grønlands Tekniske Organisation (GTO—the physical planning bureau functioning under the Ministry for Greenland) had developed a five-year investment schedule which would result in a yearly output of 40,000 tons.

The Ministry considered this matter further through a special "coal mining committee." This committee could not recommend closing the mine. However, other government agencies found the operating deficits too large and in 1968 it was decided that Kutdligssat would be closed by January 1973. By October 1972, the last family had left Kutdligssat.

It is not entirely clear that other alternatives to closing the mine were thoroughly investigated.*

The Kap Farvel region was another depressed area. Here, too, climatic change had caused the sealing stock to decline. In 1947 the region had a population of 427. Most of the people thought of themselves as "hunters" and this perception of a 'more noble' lifestyle interfered with their accepting fishing as an alternative. Those who had taken up fishing with any enthusiasm found operations difficult due to the *Storis*. The Commission could find nothing in the environment which might offer some other more profitable pursuit. Due to the widespread poverty, it was recommended that the region's entire population be resettled as

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*For a more detailed account, see Philip Lauritzen, *Reportager Fra Grønland*, København: Information, 1974, pp. 8-26.

quickly as possible. Appendix II describes conditions in the region after it was visited by an educational officer.

In Godthåb it was feared that designating this town as the capital could lead to an exaggerated administrative centre. In spite of Godthåb's location near favourable fishing grounds, there was little evidence of Greenland's economic base in the town. The administrative and shipping sectors were much more strongly represented. The capital, it was felt, should also show some evidence of the emerging fishing industry. Further, questions were raised regarding future water supply, the long distance from town to harbour, and the small size of the harbour in the face of the facilities which would be needed to accommodate both fishing and ocean-going ships.

The Commission, considering these four problems as the most important, chose to encourage resettlement of the population involved in three of the four regions. Four criteria were established before any new or existing place would be developed:

1. A place had to have easy access to rich fishing areas—especially codfish. Good harbour facilities with room for future expansion of a sea-going fleet would also be required.

2. Water supply should be sufficient as well as adequate sewage and disposal means.

3. The place must also possess minimal site complications so that construction problems would be eased.

4. The place should be on major transport routes. It should be accessible to shipping.

Having stipulated future development guidelines, the Commission then proceeded to designate towns where initial investments would be concentrated. These were: Narssak, Egedesminde, and Godthåb—or another place in Godthåb commune which offered better development possibilities. (See FIGURE 9.)

The government investment program would concentrate, first and foremost, on a housing program. An educational program would be planned whereby Danish instruction would be emphasized. New schools would be built and new hospitals planned for Holsteinsborg, Egedesminde, Julianehåb, and Angmagssalik. Finally, improved harbour facilities were slated for Egedesminde, Godthåb, and Julianehåb. There were no immediate plans for industrial facilities as these would be left to the private sector. It was stated, however, that government investment would take place in those industrial sectors into which no private capital moved. In practice, this meant that KGH would continue to operate in those places where there was no private enterprise. The Commission, recognizing the high risk involved with any financial enterprise in Greenland, suggested that capital grants or loans be made available to private entrepreneurs.

Although the private sector now had free access to compete in Greenland, the government was of the opinion that private business must benefit the Greenlanders. Therefore three possible forms of restraint on the private sector were proposed. Briefly, these involved wage and price controls, a massive joint venture by government and private enterprise (in the form of a large corporation), or a price-stabilization fund. The price-stabilization approach was chosen.

In times when export sales were particularly high, a tax would be placed on all sales. These monies would accumulate in a fund and in periods of poor prices on export sales, draws on the fund could be made subsidizing the price received by Greenlanders for their produce. The result would be that Greenlanders would not feel the harsh effects of economic fluctuations.

Transport and Supply System

One of the sectors most in need of rationalization, was the transport and supply system. As stated above, there were 66 towns, or communes, in West Greenland in 1949. As indicated in TABLE 5, each commune (according to the 1950 changes) had one or more *udsteder* within its boundaries. Another level of smaller settlements—*bopladser*—were also found in the communes (but are not included in TABLE 5). A complete range of goods was delivered to each town, and in some cases to villages. A town, as a communal centre with warehouse facilities, would have supplies and equipment freighted by coastal vessels to its satellite villages and settlements.

Some appreciation of costs and logistical problems can be inferred from the fact that in 1947 West Greenland had 78 towns, villages, and settlements with retail sales outlets (*butikker*). During the war, the supply system to these places was interrupted and subsequently re-organized. Julianehåb, because it had a very large population, continued to receive direct shipments from the United States of all types of goods. The remainder of South Greenland received consignments of bulk goods in Sukkertoppen, while manufactured, hardware, and miscellaneous goods went

to Godthåb. All goods for North Greenland went to Egedesminde. These "transshipment harbours" then sent goods to the commune towns which in turn organized re-shipments to villages and settlements.

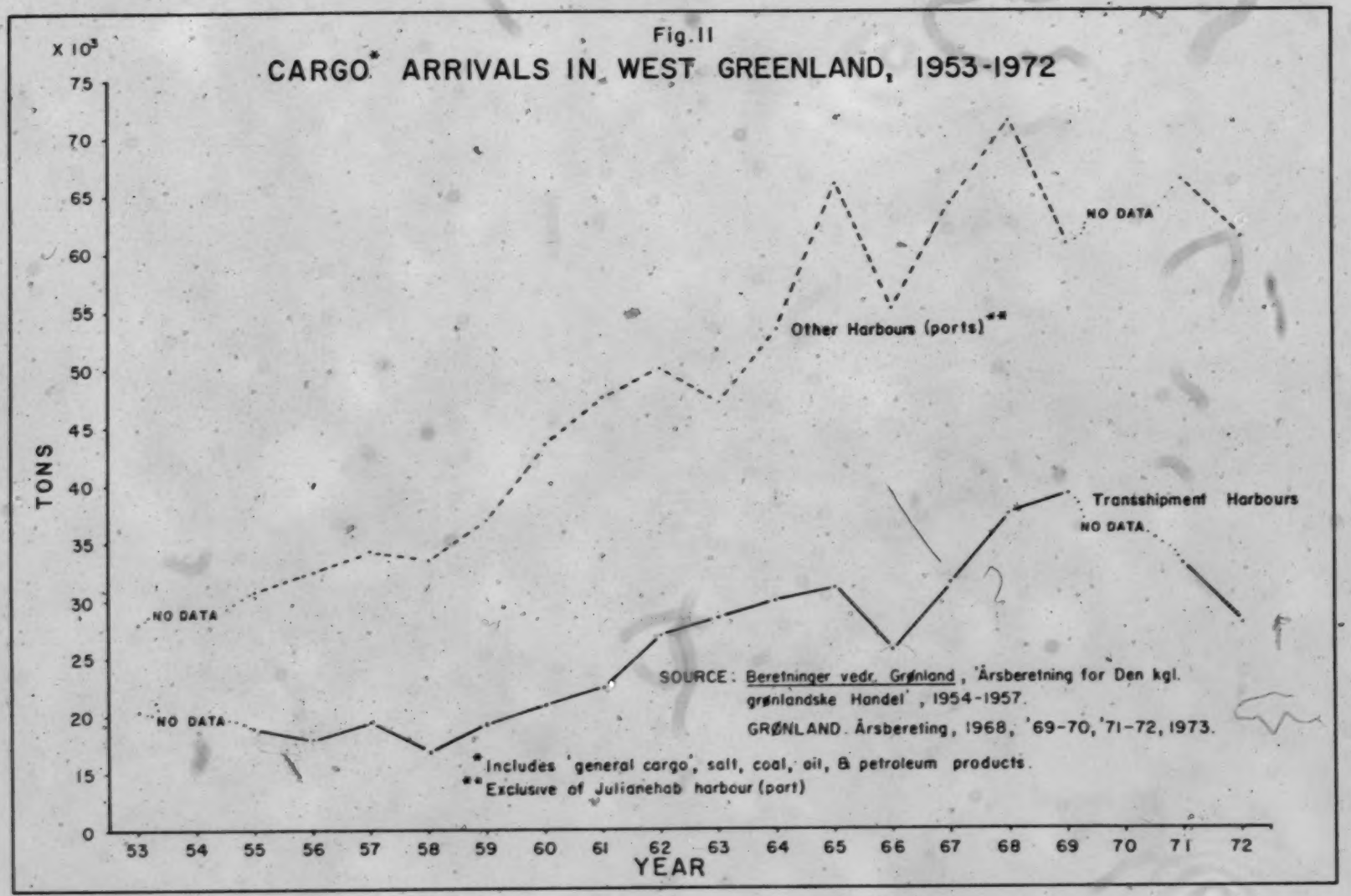
Although the pre-war system was re-established in 1945, the Commission Report of 1950 re-introduced the "transshipment harbour" scheme with some modification. Julianehåb (1951 population 4,480) would continue to receive direct shipments of all types of goods; its population size was sufficiently large to justify such direct shipments. Godthåb, supplying the remainder of South Greenland and Egedesminde, serving North Greenland, were designated "transshipment harbours." Large bulk consignments were sent to these harbours and then coastal boats shipped directly to villages. Commune centres, or towns, were then circumvented and cargo handling charges saved.

All other goods not designated as "bulk consignments," went directly to commune towns for eventual distribution to their satellite villages and settlements. Although complaints were voiced that commune towns would be discriminated against in their growth, the Commission noted the savings in terms of navigation aids, faster turn-arounds for return trips to Denmark, and more rationalized utilization in the handling of goods and wares through centralized warehousing. In FIGURE 11, the record of cargo arrivals in West Greenland is shown for the period 1953-1972.

The Commission report does not state how large a share of all incoming cargo would be captured by the "transshipment harbours." The percentage shares have varied from a high of 42 per cent in 1953, to a

Fig. II

CARGO* ARRIVALS IN WEST GREENLAND, 1953-1972



SOURCE: Beretninger vedr. Grønland, 'Årsberetning for Den kgl. grønlandske Handel', 1954-1957.
GRØNLAND. Årsbereting, 1968, '69-70, '71-72, 1973.

*Includes 'general cargo', salt, coal, oil, & petroleum products.
**Exclusive of Julianehab harbour (port)

low of 31 per cent in 1972. A review of these data seems to indicate foreign coal supplies and petroleum products are being delivered to many non-transshipment ports in recent years. Improved storage facilities and off-loading equipment may be one reason for this trend.

THE GREENLAND COMMITTEE REPORT OF 1960

During the 1950s, the government undertook a wide range of investments in Greenland. The investment schedule was not fixed by law, but rather represented a suggested guide for estimated amounts over a ten-year period. TABLE 6 shows the proposed capital expenses and operational budgets during this period. The actual amounts spent totalled far more than these estimates. The Danish *Folketing* (Parliament) passed laws throughout these ten years to fund projects related to the recommendations. The Greenland Committee's Report of 1960 was considerably different. It was successful in achieving for the Ministry of Greenland the authority for expenditure of money (Mattox, 1973, p. 160). TABLE 7 is a record of total expenditures over the decade, by three-year periods including actual investments and operating budgets.

In the table of Estimated Capital and Operational Expenditures (TABLE 6), proposed capital investments in housing, health and welfare, education, and the supply service are clearly evident. In the record of actual investments, these sectors were, in fact, emphasized. The Greenland Commission then was able to see its recommendations followed through, but at a cost that was five times higher than what had been proposed.

TABLE 6

Estimated Capital and Operational Expenditures, 1951—1961

Sector	Capital Expenditure (1,000 kr.)	Operational Expenditure (1,000 kr.)
Settlement Improvement	.200	—
Administrative and Political Problems	1.890	.350
Technical Organization	8.775	1.760
Scientific Activities	—	.130
Legal Systems	.975	.172
Education and Schools	6.019	1.022
Church	—	.025
Other Cultural Institutions	1.950	.445
Health and Welfare	16.497	2.250
Housing	21.500	2.600
Social Conditions	—	—
Supply Service	17.290	1.867
Fishing Industry	4.500	.160
Mineral Development	2.000	.090
Traffic and Navigational Improvements	6.000	1.150
Wage Policies	—	.020
Sheep Industry	.365	.050
Total:	87.961	11.607

Source: *Grønlandskommissionens Betænkning, I,* "Indledning Placering og Udformning af Bebyggelser—Den Fremtidge Anlægsvirksomhed," 1950, p. 57.

TABLE 7

Public Investments and Operating Budgets

In Greenland

(mill. of kroner)

	1950-1953	1954-1957	1958-1961	Total
Public Investments (Total)	93.8	146.9	224.7	465.4
Operating Budgets (Average)	28.0	42.0	78.0	49.0
Yearly Investment (Average)	24.0	37.0	56.0	39.0

Date Source: — Mogens Boserup, *Økonomisk Politik I Grønland*, København: Grønlandsudvalget, 1963, p. 6.

— *Betænkning Fra Grønlandsudvalget af 1960* (Betænkning Nr. 363), København: Statens Trykningskontor, 1964, p. 13.

In TABLE 7, Public Investments and Operating Budgets in Greenland, an original 100 million kroner that was supposed to extend over ten years, was exhausted in the first three-year period. Both rates of investments and average operating budgets increased in each successive period. For the years 1962, 1963, and 1964 investments were 109, 111, and 136 million kroner, respectively. By the end of 1961, more than 465 million kroner had been invested in Greenland. In the last three-year period, investment expenditures were increasing (356 million kroner for

the period 1962-1964).

Thus for three time periods, the percentage investment in such infrastructural features was 27 per cent, 24 per cent, and 27 per cent, respectively. Boserup has pointed out that one reason for such wide discrepancies between Commission estimates and actual expenditures was that water supply, electrification, and road-building estimates within towns were not entirely included in the 1950 plan (Boserup, 1963, p. 5).

A surprising aspect is that little thought was given to direct productive facilities, e.g. processing plants of various types. The Commission's perception was that the private sector would move rapidly into this area. When this failed to happen, the statistics reveal a latent involvement by government in productive facilities. Whereas for each of the first two time periods, 1950-1953 and 1954-1957, only five million kroner were invested (representing 5.32 per cent and 5.40 per cent, respectively); by the 1958-1961 period, the amount had increased to 19 million kroner or almost 8.50 per cent.

The reason why Danish industrialists did not invest in Greenland can be attributed to several factors. In spite of attractive loans and other incentives offered by the Danish government, investment may have been considered too great a risk. While private enterprise was allowed to function in Greenland, restrictions continued on the activities of private entrepreneurs. Greenlanders were not to be exploited (Svendsen, 1958, p. 27).

One suspects that perhaps requirements such as hiring of Greenlandic labour, the lack of economic infrastructure, and general lack of

knowledge about conditions in Greenland may have prevented the movement of private capital. Barfod has commented on the private sector's poor performance in Greenland. With the exception of skilled tradesmen (carpenters, plumbers, machinists, etc.) the private sector has only shown initiative in food services and other retail trades (Barfod, 1958, p. 340).

It was estimated that the private retail trade sector accounted for about 10 per cent of all retail sales in 1960. Mail order houses took another 10 per cent, so that KGH continued as the dominant retail trade institution in Greenland. It was estimated that in 1960 there were 40 skilled tradesmen in Greenland, employing 120-160 workers (Grønland-sudvalget, 1960, p. 41).

Another problem relating to industrialization or production was the uneconomic structure of the fishing industry. Prior to 1950, cod fishing was characterized by the use of hand lines, small open boats, and was markedly seasonal, i.e. four to five months in the summer. The introduction of the pound net improved the total catch for several years. Although more motorboats began to be seen after 1950, they were restricted to fjords and leesides of skerries. In 1963, fish stocks of inshore waters failed and it became clear that the pound net could not be relied upon to meet capacities of filleting and shrimp processing plants (Ministeriet for Grønland, 1970, p. 58; Smidt, 1965, pp. 63-73). Most of the fishing vessels were still less than 22 feet in length. Some attempts at expanding capacities and ranges of the fishing fleet had begun in the late 1950s. These larger vessels, between 36-42 feet in length, were used

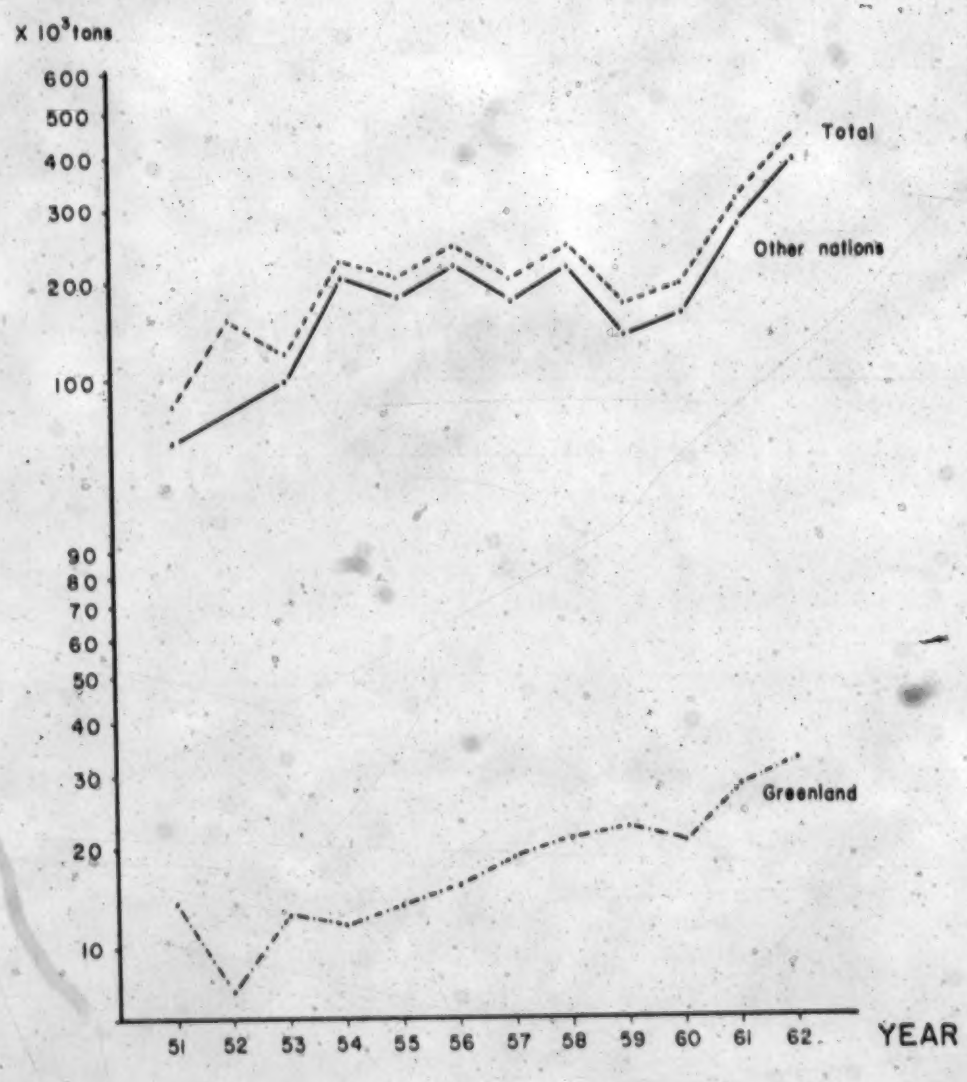
primarily in the emerging shrimp industry. This did little to solve the problem of assuring a sufficient flow of fish to processing plants.

The solution, which became increasingly clear, was that Greenlanders had to obtain access to those rich fishing banks lying 10-15 miles off the West coast. *"Ud på bankene!"* ("Out to the banks!) became the watchword of the 1950s. FIGURE 12 shows the potential harvest which was being taken by other nations. The advantage of close proximity to the banks and therefore cheaper operating costs were, of course, easily perceived.

Finally, another issue having strong spatial implications was the method of state subsidization for KGH. KGH is divided into two major divisions for accounting purposes: Sales (purchasing raw materials from Greenlanders, secondary production, and export sales of Greenland products), and Supply (importing and sale of consumer goods in Greenland). Deficits in the Supply division came about because KGH was mandated to supply *all* places in Greenland. The costs of servicing a small settlement, i.e. transportation, sales personnel, maintenance, etc., could not be sustained by increasingly lower retail sales. Substantial deficits were therefore created. The prevailing method for balancing the account was a grant or subsidy against *total* deficits occurring each year. An alternative method was to support specific consumer goods (which were considered "necessary") along with subsidizing supply operations to the more expensive places, i.e. the smaller and more remote *udsteder*. The Sales division, on the other hand, enjoyed profitable operations because

Fig.12

TOTAL FISH CATCH IN DAVIS STRAIT, 1951-1962



SOURCE: Betaenkning fra Grønlandsudvalget af 1960 (Betaenkning Nr. 363), Kobenhavn: 1964, p 93.

of fixed costs and wage levels in Greenland.

When the decision was taken to move Greenland into the world economy, this also meant that Greenland would be treated like any depressed region in Denmark proper. Investments undertaken had the primary aim of attempting to raise incomes to levels found within the rest of the kingdom. If wage levels were to rise for workers in processing, it was then also felt that workers within primary productive lines should also benefit. (This means that *indhandling* rates must also rise.) The net effect would be to lower profit margins within the Sales division.

Fear also was expressed that private retailers would gravitate to those larger towns where expenses were low and markets of a sufficient economic size. The combined competition of these private retailers would cut profit margins of KGH stores in towns and yet deficits would continue to mount in those uneconomically small places in which KGH was obliged to maintain services. Government administrators, nevertheless, were reluctant to allow retail prices at smaller places to rise to levels where they would cover costs involved. TABLE 8 is a record of subsidies granted in West Greenland for the Supply division and the additional subsidy granted for coastal traffic.

Although these data do not indicate subsidies granted to specific places, it would appear that supply subsidies were declining (due to the closing down of smaller settlements), but transportation costs showed no signs of declining. Thus, KGH was faced with a dilemma: within the Sales division wages were to be increased plus *indhandling* rates. At the same

TABLE 8

Supply and Coastal Transport Subsidies,

1953—1962

Year	Supply Subsidy (1,000 kr.)	Coastal Transport Subsidy (1,000 kr.)
1953	7.598	.665
1954	no data	no data
1955	7.357	.898
1956	7.768	1.193
1957	7.903	1.085
1958	7.415	1.404
1959	8.428	1.538
1960	9.371	2.187
1961	7.847	2.973
1962	6.445	2.989

Source: *Beretninger vedr. Grønland*, "Årsberetning [1953 ... 1962] Den Kongelige grønlandske Handel."

time, the Supply division (which operated at a loss) was threatened with stiffer competition at the larger places, but still had to maintain an increasingly expensive service to smaller places. The effect on the Supply division would be even greater deficits.

Since it was impossible to rationalize operations any further in the Supply division, the Sales division came under scrutiny. The threat to Sales (where a clear profit earned on its operations could offset mounting losses in Supply) had to be countered. Discussion began then on designating a hierarchical level of places where different prices would be offered to Greenlanders for their catches. Confining KGH's gathering of raw or semi-processed fish to major installations would increase profits sufficiently to balance increased deficits in Supply.

The plan also had another aim. A geographically discriminated price policy would speed up migration to central towns where a labour force for secondary production was foreseen.

These problems were further aggravated by other economic indicators that began to emerge toward the end of the 1950s. While it would appear that substantial gains had been made as measured by increased wage values in production and from other sources, much of this was due to government transfer payments in one form or another.

TABLE 9 shows income sources in Greenland. Much of the income is dominated by a small minority of Danish technicians sent to Greenland for the purpose of carrying out the industrialization programs. The number of Danes within direct productive activities are few and are usually the higher paid managers. In 1960, almost 60 per cent of the

TABLE 9

Sources of Income in Greenland, 1947, 1955, and 1960
(millions of kroner)

	Greenlanders			Danes		Total	
	1947	1955	1960	1955	1960	1955	1960
A. Fishing, Hunting and Sheep raising							
1. Sale of products to KGH (*indhandling*)	1.4	5.6	10.0	—	—	5.6	10.0
2. Sale of products to KGH (private industry)	.1	.8	1.5	—	—	.8	1.5
3. Value of subsistence	2.8	7.0	9.7	—	—	7.0	9.7
4. Secondary production	.8	4.5	7.4	1.4	2.2	5.9	9.6
Sub Total:	5.1	17.9	28.6	1.4	2.2	19.3	30.8
Wage Incomes							
B. Construction, Public Works, etc.	.5	4.0	7.2	9.0	21.0	13.0	28.2
C. Government Supply Service	1.5	5.1	9.3	1.9	2.7	7.0	12.0
D. Private Tradesmen, Domestics	—	1.7	3.0	2.5	4.0	4.2	7.0
E. Schools, Health and Welfare	.8	4.0	8.0	5.3	10.3	9.3	18.3
F. Other Public Institutions	.2	.3	.9	.6	.9	.9	1.8
Sub Total:	3.0	15.1	28.4	19.3	38.9	34.4	67.3
TOTAL:	8.1	33.0	57.0	20.7	41.1	53.7	98.1

— None

Source: Boserup, *Økonomisk Politik I Grønland*, p. 10.

"Wage Income" went to Danish workers. The picture that begins to emerge then is that Greenlanders were not able to share in the modernization programs designed to raise their real incomes to those of 'Denmark South.'

Government transfer payments to Greenland, while substantial, must be treated with caution because of the greater costs in rendering services in northern environments. TABLE 10 summarizes the income positions *vis-à-vis* Greenland and Denmark for 1960.

TABLE 10

Incomes in Greenland and Denmark

1960

Incomes	Total		Per Capita	
	Greenland	Denmark	Greenland	Denmark
	(mill. kr.)	(mill. kr.)	(kr.)	(kr.)
Private Sources	60,0	27.600	2.000 (approx.)	6.000 (approx.)
Government Transfer	35,7	2.500	1.200 (approx.)	.550 (approx.)
TOTAL:	95,7	30.100	3.200	6.550

Source: Boserup, *Økonomisk Politik I Grønland*, p. 306.

While government transfer payments reveal efforts by the Danish government to modernize Greenland, they were not sufficient to close a vast gap existing between per capita incomes in the two regions. After ten years, *real* incomes had risen by three times those extant in 1947. However, per capita incomes continued to lag behind by two-thirds of per capita incomes in Denmark.

The causes for this situation can be found in a rapid increase in consumer goods in Greenland and a population that grew by almost 30 per cent in West Greenland. (In 1950, the West Greenland population was 21,661; in 1960, it was 30,109.) In 1962, Greenland's native population numbered 30,288—a figure that would not occur until 1970 according to the Greenland Commission Report!

The structure of the population was also a cause for some concern. Forty-five per cent of the population was made up of children under 15 years of age. Obviously, such a large proportion of the population not yet in the work force adds a greater strain on per capita distribution of income.

These trends in population, per capita incomes, and structural deficiencies in both the fishing industry and Supply division of KGH became more apparent towards the end of the 1950s. In the fall of 1959, the Greenland Provincial Council requested a thorough review of economic development in Greenland. Their request resulted in the Greenland Committee of 1960. This report was not issued until 1964, but because the committee was established in 1960, the designation "G" (Greenland)—1960, is often used when referring to that report. Some of the planning

proposals were a continuation of projects already initiated in the late 1950s or early 1960s. Of interest, for purposes of this study, are the industrialization policies and the regional development plans.

Industrialization Policies

With the conclusion of G-60's work in 1964, a new ten-year plan had been formulated. This new model, which was to begin in 1966 and end in 1975, proposed investments totalling 2.1 billion kroner and an equal amount for operational expenses. Housing construction would receive 31 per cent of the investment budget or 585 million kroner, public institutions (education, health and welfare, other social agencies) 18 per cent or 330 million kroner, industrial development 14 per cent or 260 million kroner, public works 12 per cent or 220 million kroner, communications and transport services 9 per cent or 169 million kroner, Supply division (KGH) 11 per cent or 210 million kroner (*Betaenkning*, 1964, pp. 198-199).

G-60's industrial strategy perceived two needs which were central to the industrialization of Greenland. These involved the problem of maintaining adequate flows of raw material for processing and a greater capital investment for enlarging the structural capacity of the fishing fleet.

Raw Material Supply. A growing population, as mentioned above, implies a large labour force in the future. Since commercial fishing would continue as the basic industry, plans for expanding processing could assume an adequate supply of labour. Ensuring an adequate flow of raw materials was doubtful given the existing structure of the fleet. Plans

called for construction of long-line boats and, eventually, stern-trawlers.

Since the Committee anticipated, by 1966, five filleting plants, this meant a need for a total of 35 long-line boats or 14 trawlers. These needs were based on a model whose output was considered possible under Greenlandic conditions. A maximum capacity of 40,000 pounds of finished cod per diem was built into the model. Experience indicated that one long-line boat could land 1,500 tons of raw fish per annum based on 210 fishing days. To reach 85 per cent of total raw fish capacity, 10,500 tons per annum would be needed. This could, therefore, require seven long-line boats being utilized to supply a processing plant. The yield of finished product to raw material is about 40 per cent or 4,200 tons of frozen fish.

The Committee suggested that an initial purchase of four or five long-line boats be undertaken until such time as they could be leased to private interests. Smaller "cutters" were planned for fishing salmon, shrimp, and Greenland halibut.

The organization of raw material supply to satisfy plant capacity also illustrates the concept of multiples as a fundamental element in planning external economies of scale (Alonso, 1971, p. 16).

Capital investment. As a result of G-60, a special committee from KGH was formed to develop major lines of development for the fishing industry (Grønlandsrådet, 1965a). In 1965, the fishing fleet in Greenland was comprised mainly of boats 6.6 m (22 feet) or less. TABLE 11 shows the distribution by size class.

TABLE 12

Distribution of Fishing Boats by Size Class, 1965

	Size Class feet	meters	Number of Boats
Less than	22	(6.60)	619
	24	(7.20)	30
	26	(7.80)	14
	30	(9.00)	58
	32 and 34	(9.60 and 10.20)	14
	36	(10.80)	35
	42	(12.60)	30
Maximum	67	(20.10)	9
TOTAL:			809

Source: Grønlandsrådet, *Rapport til . . . . .* (Dok. nr. 12), 1 April 1965, "Bilag 6," p. 1.

Author's Note: The document gives boat lengths in feet. Metric conversions have been added.

The Committee found that 75 per cent of the boats were 22 feet or less and were not suitable for keeping fish fresh for a reasonable length of time. Boats between 22 and 36 feet (6.60 and 10.80 m) (15 per cent) are only useful for fishing in summer. They are not seaworthy enough for use under winter conditions.

Most of the boats in the 36 feet and over class were primarily designed for shrimp fishing in the summer and salmon fishing in the fall.

By 1965, with the addition of 20 new cutters, there would be a total of 100 of these vessels. KGH, in cooperation with Greenlandic fishermen, would limit the number of cutters operating in Disko Bay (site of the richest shrimp beds) to 48. The remainder would participate in cod fishing in spring, and salmon fishing in the fall. Beyond this fairly large cutter fleet, there was no plan for having larger or different types of vessels stationed in Disko Bay.

In South Greenland (Nanortalik, Narssak, and Julianehåb communes) there was recognition of the *Storis* as a major problem interfering with movement to and from fishing regions. Therefore, a small boat fleet confined to inshore (skerry) and fjord fishing would be maintained. The 'Open-Water' region would be the prime beneficiary of the new long-line boats and stern-trawlers.

To stimulate development of the fishing fleet, the government would provide financial assistance for building vessels under the following conditions:

- vessels under 10 gross tons: loans up to 85% of total costs delivered in Greenland with an interest rate of 4% and a repayment period of 10 years.
- vessels above 10 gross tons: subsidy of up to 20% of total costs and loans for the difference between the subsidy and 90% of the costs delivered in Greenland, at 4% interest and a repayment period of 15 years.
- for vessels over 45 gross tons the subsidy is increased to 30% (Organization for European Economic Development, 1970, p. 149).

Regional Development Plans

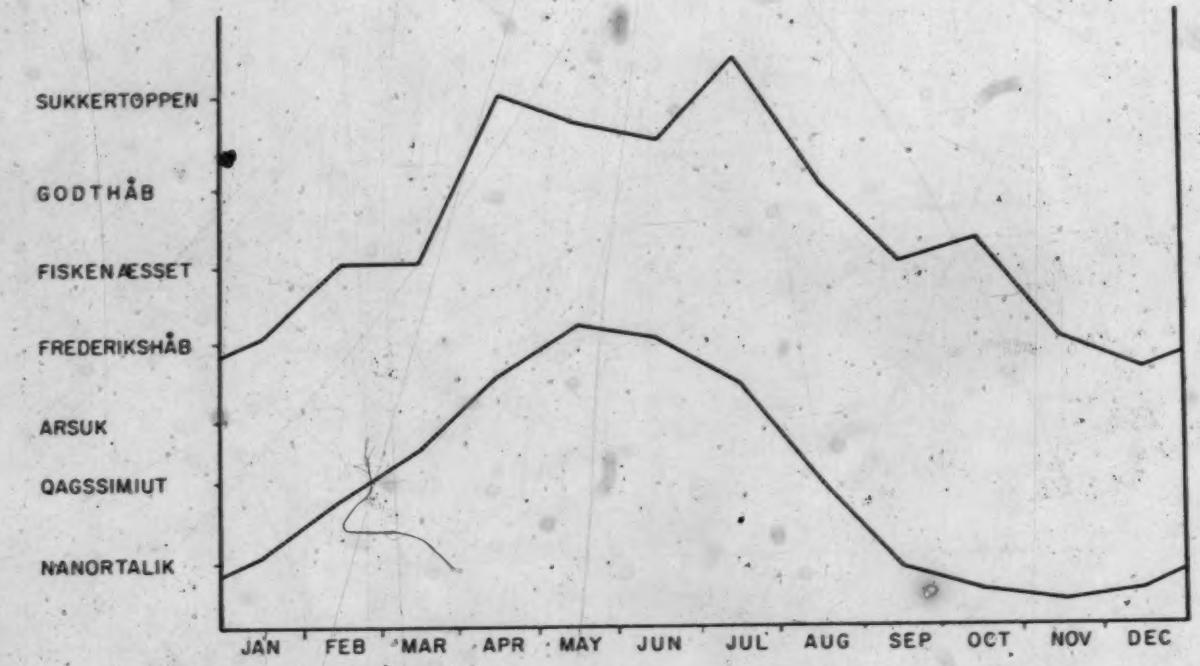
In the third chapter of the G-60 report, "Goals for Policy in Greenland," (author's translation) it becomes clear that the Committee had to face a fundamental problem regarding any investment. Recognizing that some Greenlanders were not interested in migrating to other places, the committee posed two questions: 1) should investment be concentrated at places that have the best development possibilities? or 2) should the monies be more evenly distributed, geographically, so that smaller places (*udsteder* and *bopladser*) would be prevented from declining any further? The Committee supported the former of these two choices.

The decision was not necessarily one of towns *vs.* villages and settlements. It was stated that some towns in Greenland function only as administrative and supply depots for a commune. Accessibility to rich fishing banks off Southwest Greenland and lack of *Storis* were critical in any search for an area to concentrate investments. Ice-free water was important if there was to be an intensive year-round fishing operation. As might be expected, the decision reflected a fairly well-defined region along the southwest coast.

Some explanation of the causes of open water has already been provided in Chapter II. The quantity of *Storis* flowing around Kap Farvel and the temperature of the West Greenland Current are major elements in determining the ice-free zone. FIGURE 13 shows maximum and average extent of the *Storis* in the period from 1900-1956. Under normal conditions, access to the coast from Frederikshåb to Sukkertoppen is a reasonable certainty at any time of the year. In FIGURE 14, the ice-free

Fig. 13

MAXIMUM AND AVERAGE EXTENT OF 'STORIS' SOUTHWEST GREENLAND, 1900 - 1956

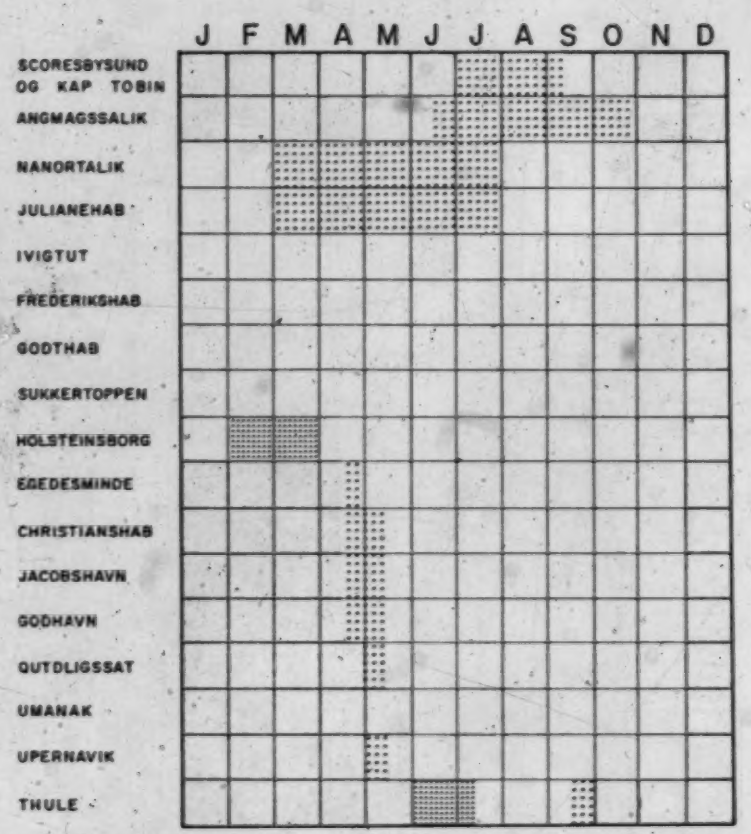


Maximum northern extent of Storis (top line) and average northern extent (bottom line)

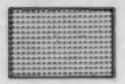
SOURCE: Betænkning... Udvalg vedrørende Besejling af Grønland, 1959, 227:129

Fig. 14

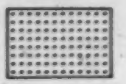
YEAR ROUND 'STORIS' CONDITIONS IN WEST GREENLAND WATERS



Shipping impossible



Shipping is possible but only with heavy ice-reinforced hulls



Shipping is possible, but with moderately ice-reinforced hulls

Shipping possible

SOURCE: Claus Bornemann, "Grønland", in, Borger i Danmark: Nøgel til Det moderne samfund, Bd. II, ed. K. Helveg Petersen, København: Branner and Korch, 1970, p. 21.

or 'open-water' zone is compared with the rest of Greenland in terms of access by the sea. Adjacent to these 'Open-Water' towns is the richest fishing in Greenland waters. TABLE 12 shows total yields of fish on the adjacent banks of the West Greenland coast.

According to the G-60 report, Frederikshåb, Godthåb, and Sukkertoppen were designated 'Open-Water' ports. In most other documents and reports from the Ministry for Greenland and KGH, Holsteinsborg also is included. No reason has been formed as to why Holsteinsborg was not originally designated an 'Open-Water' port. This study considers Holsteinsborg an 'Open-Water' port.

Regional development planning recognized the 'Open-Water' region as the prime area for major investment in deep-sea fishing. Actual planning had begun however in 1959 with expenditures of 34 million kroner, primarily in economic infrastructural facilities (Folketinget, 1959).

For the shrimp industry in Disko Bay, an additional 15 million kroner were authorized. In South Greenland the sheep industry would be strengthened by developing more pasturage, construction of a new abattoir in Nanortalik, and making available more farm extension services for sheep ranchers. In North Greenland, G-60 recommended 57 small motor boats for Umanak commune so that commercial codfishing could begin. In Upernavik commune, the sealing economy was still considered viable enough to form an economic base. Motorboats would be recommended to increase the mobility of hunters to and from hunting grounds.

With migrations being encouraged to the 'Open-Water' region, it

TABLE 12

Total Fish Yield by Region, 1954—1962

Region	Yearly Average—1,000 tons whole fish		
	1954-1956	1957-1959	1960-1962
Nanortalik and Julianehåb (Kap Farvel)	12	30	34
Frederikshåb (Frederikshåb Bank)	7	30	37
Godthåb (Fyllas Bank)	114	73	76
Sukkertoppen (Lille Hellefiske Bank)	35	39	65
Holsteinsborg and Egedesminde (Store Hellefiske Bank)	74 6	70	96
Disko Bay and Northern Regions	3	2	4
Unreported	79	6	102
TOTAL:	324	308	414

Source: *Betænkning fra Grønlandsudvalget af 1960* (Betaenkning No. 363), København: 1964, p. 93.

was estimated that the population of those four towns would increase during the ten-year planning period from 10,000 to 23,000, with half the population living in Godthåb. The villages and settlements in the four communes would decline by 3,000. It was stated that the urbanization ". . . would contribute towards alleviating a serious social problem found in villages and communes where incomes are relatively less" (*Betaenkning*, 1964, p. 181).

Migrations from villages and settlements were expected to be heavy. In South Greenland, it was anticipated that the decline would be about 20 per cent. In the 'Open-Water' region the decline would reach up to 50 per cent. Within ten years almost 40 per cent of Greenland's population was expected to be living and working in 'Open-Water' towns. Village and settlement declines in Disko Bay, i.e. Kangatsiaq, Egedesminde, Christianshåb, Jakobshavn, and Godhavn were also expected to reach 50 per cent. North of Kangâtsiak, the whole coastal area would decline by 10 per cent. Umanak and Upernâvik were considered to reflect the maximum carrying capacity of the local resource base. Migrations would equal, therefore, the excess of births over deaths. TABLE 13 summarizes the expected changes at town, village, and commune level in the ten-year planning period.

SUMMARY

The most fundamental change in 175 years of Greenland's modern history, began with the report of the Greenland Commission of 1950. It re-organized the spatio-administrative structure into larger units and

TABLE 13

Expected Population Distribution

(Persons born in Greenland)

	1965	1975	
		Natural Increase	Natural Increase and Migration
A. TOWNS			
1. Nanortalik, Julianehåb, Narssaq	4,300	6,100	7.200
2. Frederikshåb, Godthåb, Sukkertoppen and Holsteinsborg	9,700	13,775	23,400
3. Egedesminde, Christianshab, Jakobshavn, and Godhavn	5,250	7,450	6,600
4. K´utdligssat	1,300	1,850	400
5. Umanak and Upernavik	1,450	2,065	1,000
Total—West Greenland	22,000	31,240	38,600
6. North and East Greenland	1,100	1,560	1,400
7. Total—Greenland	23,100	32,800	40,000
B. OTHER PLACES			
1. Nanortalik, Julianehåb, Narssaq	2,625	3,500	1,900
2. Frederikshåb, Godthåb, Sukkertoppen, and Holsteinsborg	3,250	4,350	1,900
3. Kangatsiaq, Egedesminde, Godhavn, Jakobshavn, and Christianshåb	2,725	3,650	1;500
4. Vaigat	50	65	—
5. Umanak and Upernavik	2,350	3,100	2,100
Total—West Greenland	11,000	14,665	7,400
6. North and East Greenland	1,900	2,535	2,600
7. Total—Greenland	12,900	17,200	10,000
C. COMMUNES			
1. Nanortalik, Julianehåb, Narssaq	6,925	9,600	9,100
2. Frederikshåb, Godthåb, Sukkertoppen, and Holsteinsborg	12,950	18,125	25,300
3. Kangatsiaq, Egedesminde, Godhavn, Christianshåb, and Jakobshavn	7,975	11,000	8,100
4. Vaigat	1,350	1,915	400
5. Umanak and Upernavik	3,800	5,160	3,100
Total—West Greenland	33,000	45,900	46,000
6. North and East Greenland	3,000	4,100	4,000
7. Total—Greenland	36,000	50,000	50,000

Source: *Betænkning fra Grønlandsudvalget af 1960* (Betænkning Nr. 363), København: 1964.

it identified declining regions and new areas to be developed. The Commission, while allowing free trade with the removal of KGH's monopoly status, was nevertheless concerned to ensure the Greenlanders' economic well-being. In some respects, KGH was burdened with this responsibility. Struggling to balance its accounts and yet mandated to maintain a costly space-economy, created an insoluble problem. Some rationalization was carried out in the handling of supplies, but it was clear that KGH would have to begin a rationalization within its Sales division.

For the most part, there was little explicit planning of growth areas or points at that time. The first round of investment in a ten-year program was distributed in three different places. Through the 1950s, investments in economic and social overhead facilities were throughout Greenland. The reason for this was that the Danish government waited for private investment to come to Greenland. The government attempted to create an investment climate, but the risk was considered too great by the private sector. Toward the close of the 1950s, government investment in direct productive facilities began.

The G-60 Report, completed in 1964, formalized recent government thinking regarding future industrialization for another ten-year period. The 'Open-Water' region, that stretch of coast from Frederikshåb to Holsteinsborg, would be the prime beneficiary of more than two billion kroner. The structure of the fishing fleet would be modernized and a financial assistance program would encourage purchases of larger vessels capable of reaching the rich offshore fishing banks.

A balanced development of the 'Open-Water' region was planned.

Housing received the highest priority in view of expected heavy in-migrations. Fourteen per cent of the budget was reserved for industrial development. Although the Supply division would be maintained, the aim of G-60 was to reduce further the number of villages and settlements in West Greenland by providing attractive work opportunities for wage earners and a geographically discriminated *indhandling* system for private fishermen.

These changes were felt to be necessary if Greenland was to capture a greater share of the world market. Traditionally, the markets for dried and salted fish were in the Mediterranean region. Although an expensive investement, frozen fish yielded greater profit margins when markets opened up in the United States and Europe.

Chapter IV

THE 'OPEN-WATER' REGION

The 'Open-Water' region includes, at the present time, sixteen inhabited places in addition to the four major towns. FIGURES 15 and 16 show locations of the major towns, other inhabited places, and sites of former places. Not all settlements have figured in the fishing industry. Some have been utilized as "stations" in the whaling industry, while still others have been more closely associated with the sealing economy.*

In *Godthåb commune*, Fiskenæsset, located 150 km (95 miles) south of Godthåb, is a fishing town. A private company, Godthåb Fiskeindustri A/S, has operated a processing plant there since 1965. Much of the catch landed in Fiskenæsset is re-shipped to Godthåb town where the company has a larger plant.

Kapisigdlit (100 km or 63 miles east by northeast from Godthåb town) in Godthåbsfjord, has an economy dependent on cod fishing. Around 1950, cod occurrences in the fjord were considerable and KGH constructed some harbour facilities as infrastructure for handling the

*Whaling stations were places which contained processing facilities and serviced the whaling fleets. Their populations increased when whales were numerous. The industry has declined since the end of World War II.

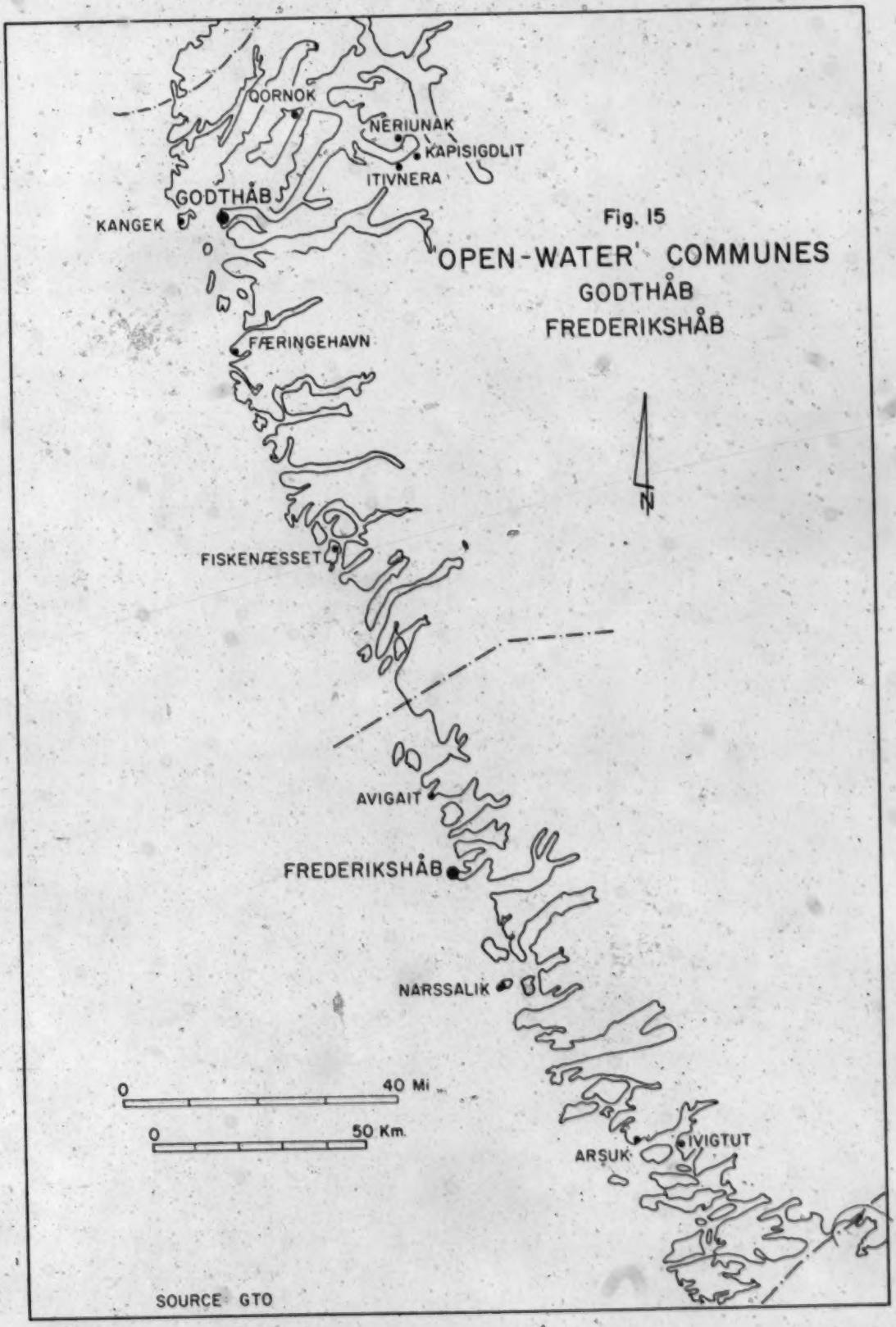


Fig. 15

OPEN-WATER COMMUNES

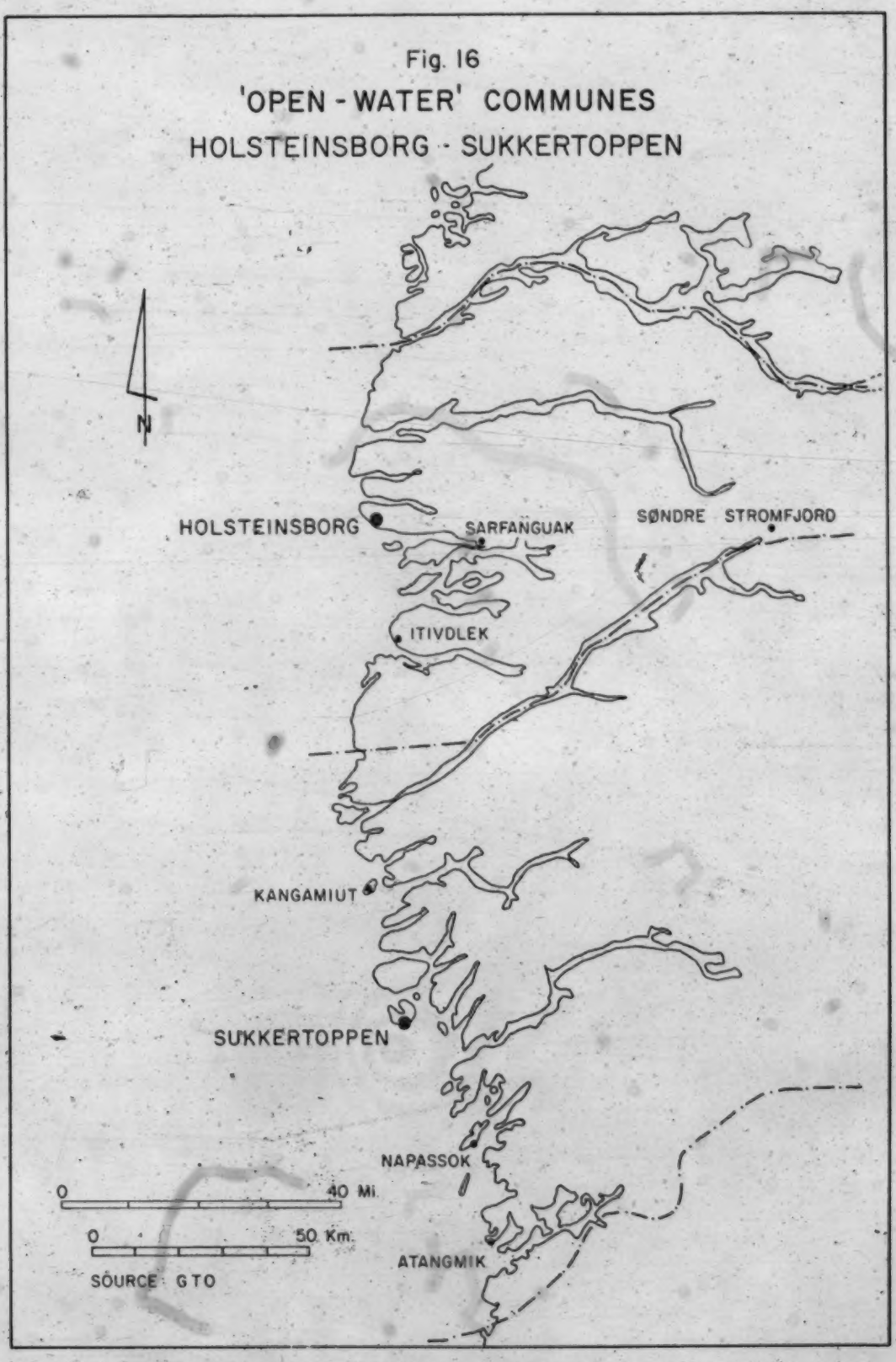
GODTHÅB

FREDERIKSHÅB

Fig. 16

'OPEN - WATER' COMMUNES

HOLSTEINSBORG - SUKKERTOPPEN



increased catch. In later years cod catches have diminished. A reindeer herder resides in the village and has the unique distinction of being the only private reindeer herder in Greenland. (In 1969 there were approximately 3,000 reindeer in Greenland. KGH owned two-thirds of the herd, the remainder being privately owned.) A few fishermen remain, along with some shepherds.

Færingehavn, 60 km (37 miles) south of Godthåb, is a fishing port established in 1927 for Faeroese fishermen working Greenlandic waters. In 1937, the port was opened between May and October inclusive for ships of all nations participating in fishing and hunting expeditions in Davis Strait. Since 1953, a Norwegian-Danish-Faeroese consortium, Nordafar A/S, has operated the port as a concession from the Ministry for Greenland. In recent years, Greenlanders have also been allowed to trade in their fish.

In *Frederikshåb commune* there are three places functioning as villages—Arsuk, Narssalik, and Avigait—besides the main centre of Frederikshåb town. Arsuk, 134 km (85 miles) southwest of Frederikshåb town, is a fishing village. A private firm, Napassok A/S, has maintained, in the past, two factory ships using local labour to process salmon catches during the season of August to November. Narssalik, 53 km (33 miles) south of Frederikshåb town, and Avigait, 29 km (18 miles) north of Frederikshåb town, are primarily cod fishing villages. Some limited processing is also carried out as part of the economic base.

In *Sukkertoppen commune* there are three places currently inhabited: Atangmik, 80 km (50 miles) southeast of Sukkertoppen town,

Kangamiut, 61 km (38 miles) north of Sukkertoppen town, and Napassok, 50 km (32 miles) southwest of Sukkertoppen town. Atangmik has traditional processing facilities in addition to special equipment for pressing cod livers. Similar to Atangmik, Kangamiut is another *indhandling* place for a variety of fish of which cod is the major item. A small private fish processing plant was constructed here in 1965. A cooperage dates back to 1846. Part of the catch traded in at Kangamiut is eventually re-shipped to Sukkertoppen for further processing.

At Napassok, a private firm has operated since 1965. Freezing facilities provide a greater capacity for production and hence more wage work ashore. Salmon and shrimp (products that command considerably higher prices than cod) are distinctive features about the production mix at Napassok aside from the usual cod fish *indhandling*. In the past it has been difficult to satisfy the labour demand, because any planned residential construction could not be guaranteed an adequate water supply.

In *Holsteinsborg commune* there are three viable places. One of these, Søndre Stromfjord, is designated as an "airport." Its population is engaged in servicing aircraft and transients bound for either Denmark or other coastal destinations in Greenland. Itivdlek, 50 km (32 miles) south of Holsteinsborg town, is a fish *indhandling* place with traditional processing facilities. Its northern location has placed it within the range for some profitable hunting of seals, whales, foxes, and reindeer. The same advantage exists for Sarfanguak, a village located 43 km (27 miles) east by southeast of Holsteinsborg town. However, whereas

"hunting," as measured by *indhandling* in 1967 at Itivdlek, accounted for 10 per cent of total *indhandling* at Sarfanguak it was only 1 per cent of total *indhandling*.

Of the four major towns, Frederikshåb, Godthåb, and Holsteinsborg are located on peninsulas, while Sukkertoppen, originally near present-day Kangamiut, was moved to Manitsok Island in 1781. Limited level terrain, poor drainage conditions, and difficulties in assuring adequate water supplies are common problems to all four towns. The site at Holsteinsborg is further plagued by areas of discontinuous permafrost.* This requires not only special building techniques, but also care in maintaining the permafrost layer (Bredsdorffs, 1967, pp. 23-27).

There seems to be little question then that siting characteristics create serious problems in attempting to implement concentrated development. For example, in 1950 GTO recommended that Sukkertoppen had room for only 1,000 people. At that time it had already expanded across a system of small bays and coves. (For this reason a network of "canals" evolved so that Sukkertoppen is often referred to as the 'Venice of Greenland.')

The need for concentrated development because of Sukkertoppen's situation relative to major fishing banks nearby resulted in the use of row houses for the first time in Greenland. At present, apartment houses have been built into the steep surrounding hills and some of the canals have been filled in to create more level land.

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*Permafrost is not encountered on ice-free coastal areas south of Holsteinsborg.

Some idea of the continuing influx of people into the town can be seen from a need to constantly revise Sukkertoppen's maximum allowable population. After 1950, it was estimated that with more spatially concentrated, multiple residential units, 2,000 inhabitants could be accommodated. Rapid growth necessitated further planning for an expansion of the urban area. GTO planners estimated in 1961 that the town would reach a population of 2,500-3,000 by 1985. In 1972, the population was already 2,873. While much of this is explained by in-migration, high birth rates also played a part. (In some years during the 1950s, the overall Greenlandic birthrate was 4 per cent.)

The expected concentration of people in the four towns has led to the necessity of providing additional land. In TABLE 14 the size of the present area is presented along with expected increases in the whole urban area.

TABLE 14 clearly shows that Godthåb and Frederikshåb are destined to have the largest increases in both area and population. For the four towns combined, the total urban area will almost double by 1985. In this connection, however, it is interesting to note that Frederikshåb has the smallest population of the four, though its *rate* of growth has been more rapid than Holsteinsborg and Sukkertoppen. The reason for this may be that Holsteinsborg and Sukkertoppen have acted as "catchments" for migrations from the Hunting Districts and the Disko Bay region. As migrations have declined, both Holsteinsborg and Sukkertoppen may continue to show smaller increases. Frederikshåb and Godthåb may now become the designated towns for any future or continuing village-to-

TABLE 14

Expected Population and Areal Increases—

The 'Open-Water' Towns, 1985

Town	Expected 1985 Population	Present Size of Urban Area	Expected Additions to Urban Area	
		ha. (acres)	ha.(acres)	%
Frederikshåb	10,000	110 (272)	200 (494)	182
Godthåb	20,000	290 (716)	470(1160)	162
Sukkertoppen	5,000	140 (346)	100 (247)	71
Holsteinsborg	5,000	300* (741)	**	
TOTAL:	40,000	840 (2075)	770(1901)	92

*Includes present and expected expansions into adjacent regions.

**No data

Source: Grønlandsrådet, *Befolkningens Lokalisering i 1985* (Dok nr. 22), 2 juni, 1967, p. 11.

town migrations. FIGURE 17 shows population trends in the four towns from 1953-1972.

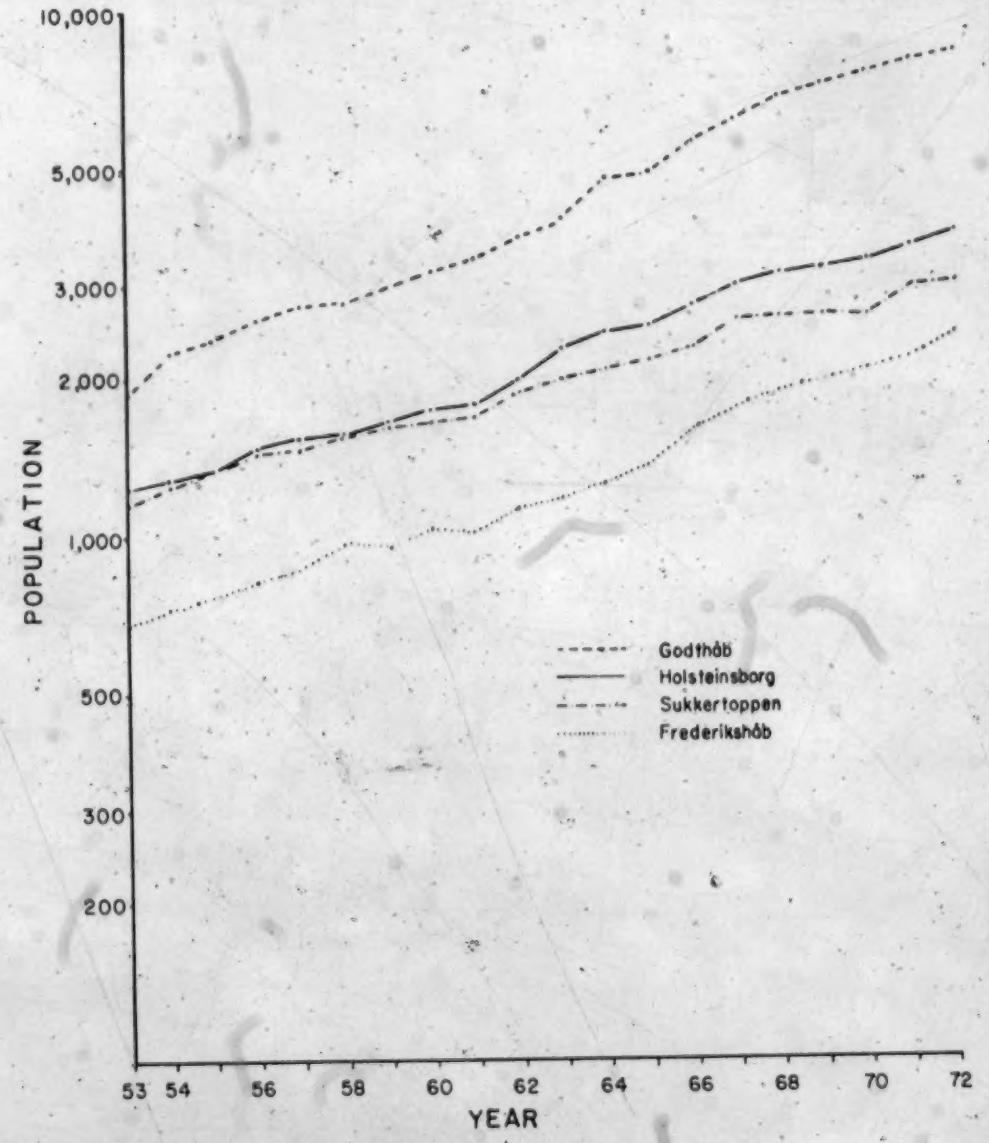
Much of the population increase in the four towns has been a result of migrations fro.. villages and settlements. Before 1964, the Greenland Administration distinguished between towns, villages and settlements, i.e. *byer*, *udsteder* and *bopladser*. As was stated previously, a major difference between the latter two categories was that *udsteder* had more people.

There does not seem to be any indication in the literature as to any varying population thresholds which could determine whether a place was an *udsted* or *boplads*. Perhaps the real difference was the presence of processing facilities. In the settlements, or *bopladser*, these processing facilities were usually limited to outdoor drying racks for fish. Villages, or *udsteder*, had "fish houses" in which filleting, salting, or cold storage operations were possible. Fish, transported from *bopladser* and *udsteder* could be subjected to further processing at larger plants in the towns. This might also include recovery of waste for fish meal.

Over the years there have been population declines in both the villages and settlements. These declines have been more severe in the settlements. Efforts to rationalize production of finished fish products, the need to provide more effective health and welfare services, and the necessity for attracting a labour force for the processing plants may be cited as the underlying explanations for these declines.

Fig.17

POPULATION TRENDS IN THE 'OPEN-WATER' TOWNS, 1953-1972 (persons born in Greenland)



SOURCE: Ministeriet for Grønland, 'Mandtalslisterne' (1953-1972) (Unpublished)
Beretninger vedrørende Grønland
'Almindelig beretning', nr.1, pp.81-83.

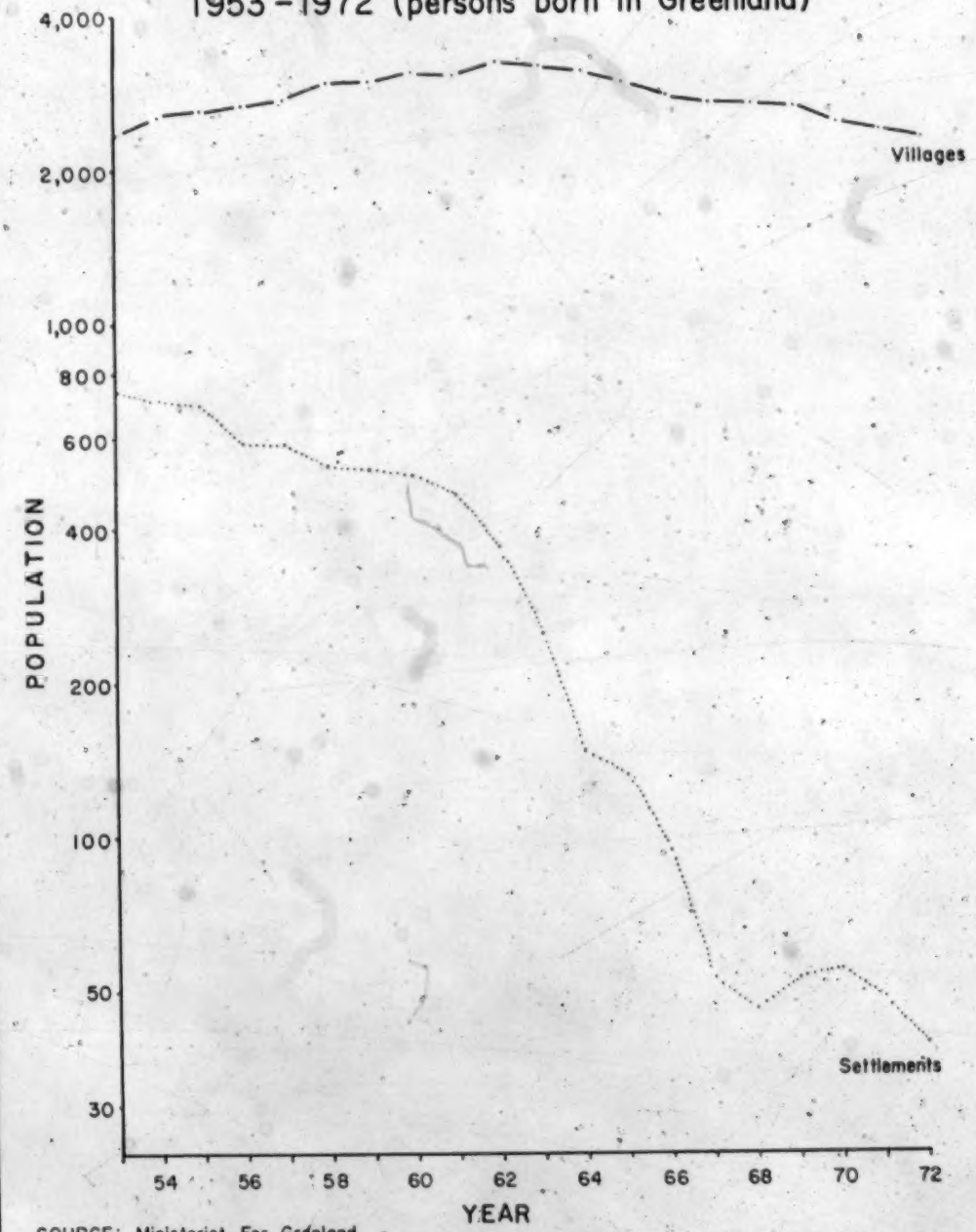
In FIGURE 18 populations for all villages and settlements in the 'Open-Water' region are indicated. The combined effects of the above stated causes are clearly indicated with respect to the settlements. Starting around 1960, declines have been at an increasing rate, so that most settlements have now been abandoned.

Only in Godthåb commune are there some settlements that remain active. A review of population records for each of those remaining active settlements would further suggest that they will probably be closed down eventually, since declines have been very considerable. (The population records for each town, village, and settlement, by commune, are provided in Appendix III.) As a result of the perceived, gradual disappearance of settlements, differentiation between *udsteder* and *bopladser* was abandoned in 1964. Now, all places not classified as "towns" (*byer*) are referred to as *bygder* (villages).

In FIGURES 19 and 20 the four 'Open-Water' commune settlement patterns are shown along with locations of former settlements. Hypotheses attempting to explain 'regularity' or 'clustering' in the spatial pattern can not be formulated. Local site conditions and situations dictating close proximity to fishing grounds explain the observed distribution. Often settlements were located in extensive fjord systems, such as those found in Holsteinsborg and Godthåb communes. While some settlements were reindeer stations, presence of cod in fjords during particularly good years gave other settlements a favourable situation relative to abundant fish resources. An excellent example is Kapisigdlit in Godthåb commune. In Appendix III, the record indicates that Kapisigdlit enjoyed a steady

Fig. 18

POPULATION TRENDS IN VILLAGES AND SETTLEMENTS, 1953 - 1972 (persons born in Greenland)



SOURCE: Ministeriet For Grønland
'Mandtalslisterne' (1953-72)
(Unpublished)

Beretninger Vedrørende Grønland
'Almindelig beretning', 1956, nr. 1, pp. 81-83.

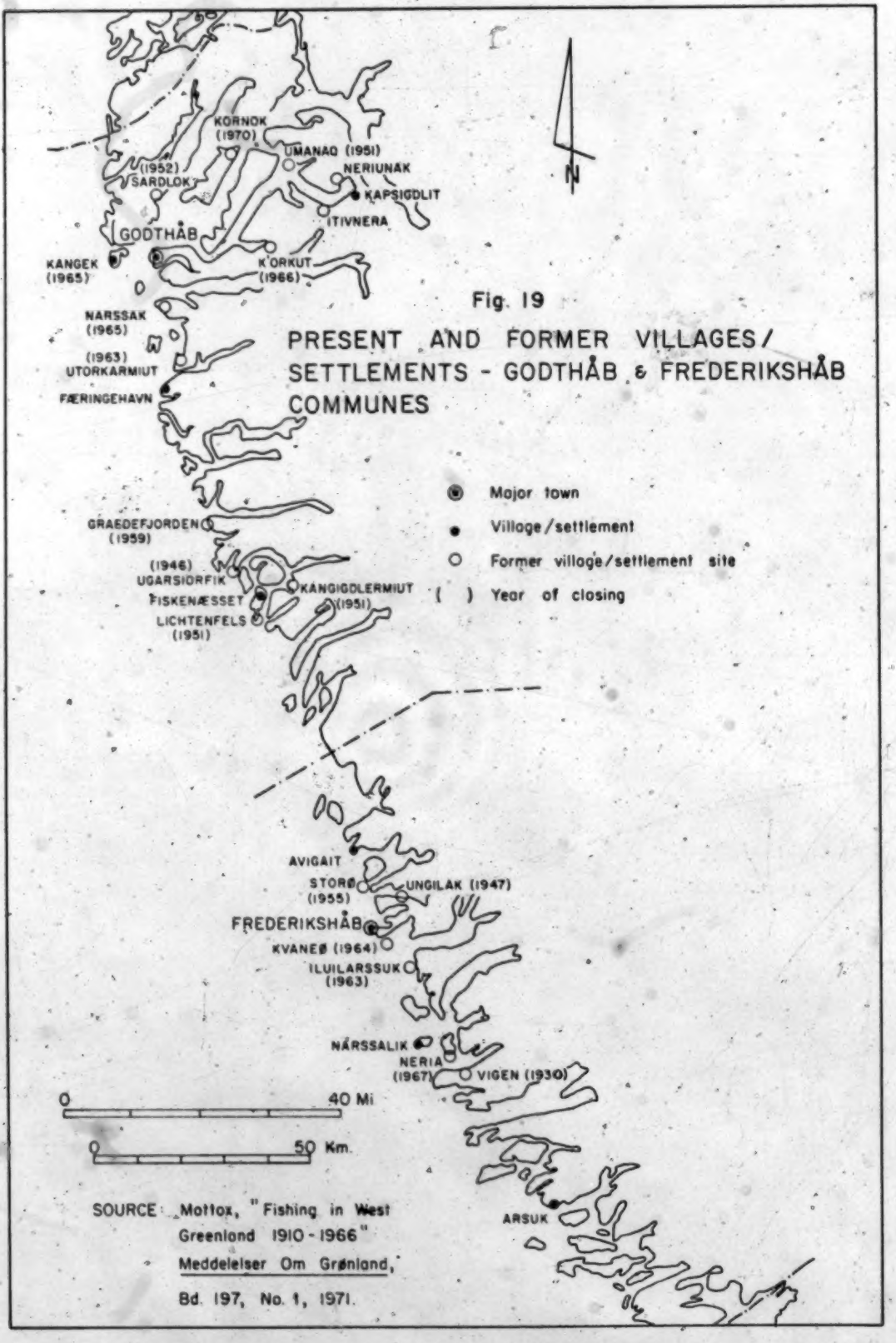


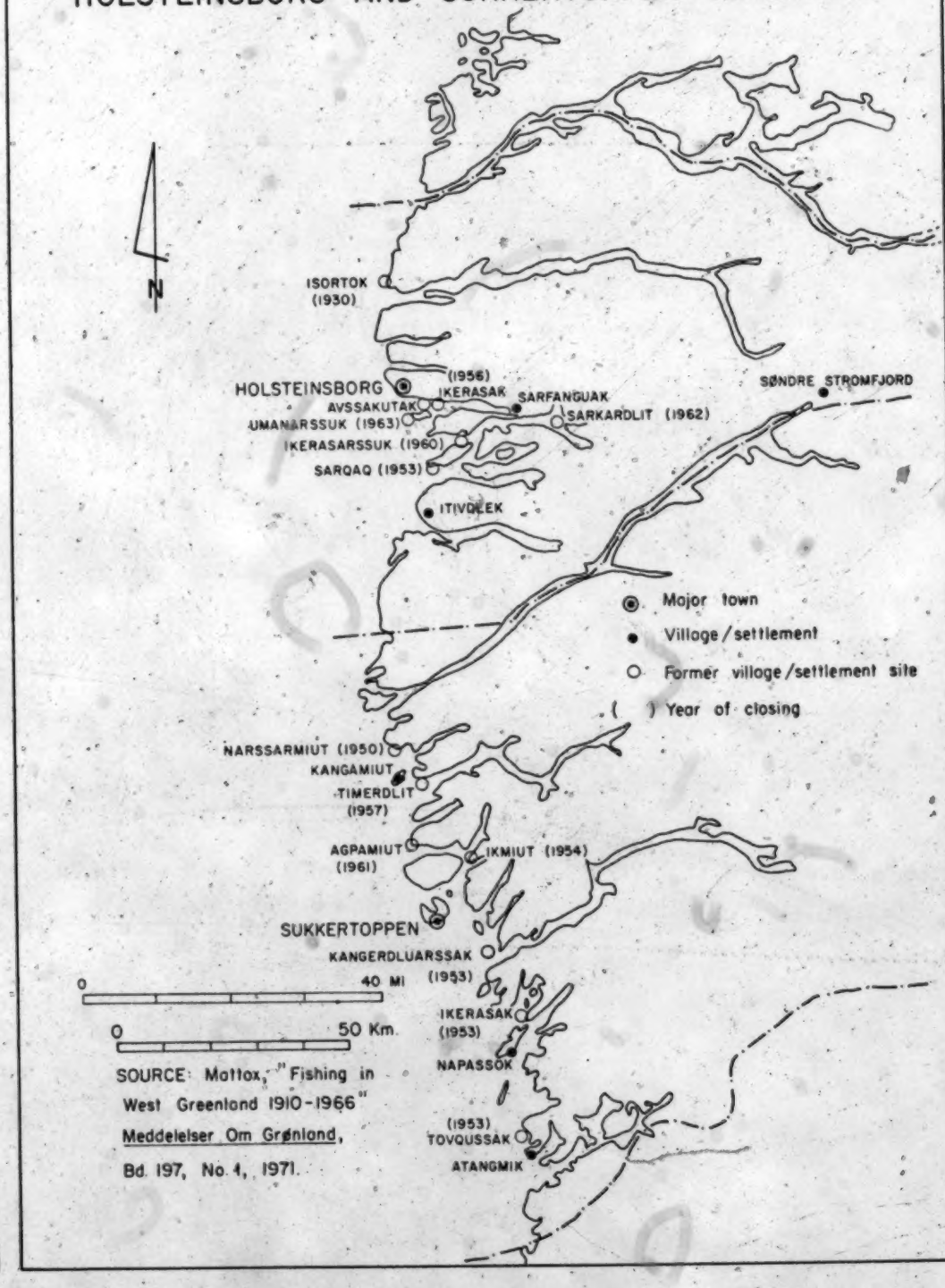
Fig. 19

PRESENT AND FORMER VILLAGES/ SETTLEMENTS - GODTHÅB & FREDERIKSHÅB COMMUNES

SOURCE: Mottox, "Fishing in West Greenland 1910-1966" Meddelelser Om Grønland, Bd. 197, No. 1, 1971.

Fig. 20

PRESENT AND FORMER VILLAGES/SETTLEMENTS
HOLSTEINSBORG AND SUKKERTOPPEN COMMUNES



SOURCE: Mottox, "Fishing in West Greenland 1910-1966" Meddelelser Om Grønland, Bd. 197, No. 4, 1971.

increase in its population until 1962. Since then the village has declined such that the 1972 population is only about three-quarters of the 1953 population. The explanation is due to marked declines in cod stocks entering Godthåb fjord.

A demand for labour in towns was often the single most important factor behind the migrations from villages and settlements to towns. Throughout the whole 'Open-Water' region, the decline in numbers of settlements has been more pronounced than declines in villages. It cannot be conclusively demonstrated but, to a large extent, villages maintained their existence within the system by attracting much of the out-migrating population from settlements. An examination of FIGURES 19 and 20 shows that many of the former settlement locations were in some close proximity to villages.

Housing and Geographic Mobility of Labour

Danish planning for the 'Open-Water' region was marked by various efforts to industrialize the four major towns—Frederikshåb, Godthåb, Sukkertoppen, and Holsteinsborg. Consequently, planned investments/services in the region would require concentrations of people so that per capita unit costs could be sustained. Industrialization meant a need for a labour force. The lack of sufficient housing capacity was a major problem. Therefore, the government set about to design generous loan programs as a means of attracting people who would be otherwise unwilling to migrate.

Another method aimed at hastening migration was the government's pricing policy on the *indhandling* of fish. This policy aimed at prying

fishermen loose from outlying villages and settlements and relocating them (or at least their fish landings) in central towns.

Housing. Housing has always been a major concern of the Greenland Administration. Around the turn of the century, 90 per cent of the houses in Greenland were still of the sod and peat type. Danish authorities persevered in attempting to improve housing standards. By 1965 only 300 sod houses remained out of a total of 7,500 residential units. This improvement was due to a series of loans, grants, and "construction holidays" given to Greenlanders so that they could build their own homes. These houses, however, invariably lacked modern conveniences, were poorly insulated, and often had as many as ten people in a house.

The government also undertook construction programs for the civil service corps, e.g. *udsted* managers, catechists (native teachers assigned to instruct and conduct religious services at *udsteder*), nurses and midwives.

The emphasis on improved housing was not unique to the G-60 Report. In the Greenland Commission Report of 1950, the unsatisfactory condition of Greenlandic housing was noted. In terms of quality, it was the Commission's aim that housing conditions should be brought up to a suitable level, i.e. something that approximated the Danish level. This meant that about 4,000 houses would have to be replaced within 20 years. When the Greenland population increases were also considered, residential construction would have to be 300 new units each year. The 1950 Commission then proceeded to establish a special "Housing Committee" in

1953. A system of grants and loans was drawn up (which was further liberalized in 1959) which was intended to encourage a potential home-owner to build his own home.* The Greenland Provincial Council and the communes were also allowed to apply for these grants and loans. Lack of skilled labour, planning, and constructional difficulties meant that GTO actually did most of the construction. Although, by 1960, the '300-new-residences-a-year' goal had been reached, the rate of population growth was then faster than had been anticipated in the 1950 Report.

G-60 recognized this increasing population growth. In its ten-year projected planning period (1966-1975), 4,500 residences were proposed and a new design of the standard "migrant" house was introduced.**

Towards the end of the 1950s a lack of level land was also beginning to hamper growth in central towns. This was also beginning to create technical difficulties with regard to water and sewage lines. If growth was to continue in such towns, the only alternative was multi-family residential units. In fact, this development had already begun in the mid-1950s for government workers. With continued in-migration to central towns, apartment house construction for Greenlanders was also initiated. By 1966, the number of residences in apartment houses equalled single family units.***

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*There is no private ownership of land in Greenland.

**A small wooden "A" frame unit on a concrete slab with two floors and centrally heated. They were usually layed out in rows.

***The preceding section draws heavily on the following sources: "Indstilling vedrørende Forvaltning af de bestående beboelsesejendomme i Grønland samt administrationen af de Grønlandske boligbyggeri," (published in July 1969) and as found in *Betænkning vedrørende Boligbyggeriet*

The first housing census in Greenland was undertaken in 1965. The total number of residences existing at that time was 7,293. TABLE 15 shows the regional distribution by towns and villages. The 'Open-Water' region had the largest share of residences constructed before 1948.. From 1948-1955, almost 40 per cent of residential construction was restricted to 'Open-Water' towns and villages. Responding perhaps to heavy population pressure in the Disko Bay region, there was more residential construction in this area during the period 1956-1960. However, by the end of 1965, the 'Open-Water' region was again in the lead with 45 per cent of all residential construction.

Some assessment of the effects of a housing program can be seen through a comparison of a later housing census completed in 1970. These data have been organized in TABLE 16 so as to facilitate comparisons with TABLE 15. As part of what might be termed "urban and village renewal," large numbers of residential structures have been removed. This is especially the case in the first three time periods, i.e. "before 1948," "1948-1952," and "1953-1955." The more recent time periods, i.e. "1956-1960" and "1961-1965" show more residences in the 1970 census than in the 1965 census. This is especially the case in the "towns"

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i Grønland (Betænkning Nr. 692), København: 1973, Statens Trykningskontor, 39, p. 130; Danmarks Statistik. Statistisk Taberlværk IX. *Grønland—Folke—og Boligtællingen, 31 december 1965*, København: 1969, see especially, "Bemærkninger til tabellerne—Boligtællingen," p. v; Hans Ølgaard, "Byggeriet I Grønland," *Grønland I Fokus*, København: 1969, Nationalmuseet, pp. 40-42; Ph. Rosendahl, "Grønlænderes Boliger," *Grønland 1948*, pp. 118-127.

TABLE 15

Residences by Period of Construction—1965

Region	Before 1948		1948-1952		1953-1955		1956-1960		1961-1965		Totals
	Towns	Villages	Towns	Villages	Towns	Villages	Towns	Villages	Towns	Villages	
Southwestern Greenland	206	151	130	65	158	94	165	93	361	71	1,494
Open-Water	339	146	278	93	317	89	308	100	862	114	2,646
Disko Bay	332	139	183	68	186	81	362	85	414	37	1,887
Hunting Districts	110	182	88	55	91	89	121	195	132	206	1,269
TOTAL:	987	618	679	281	752	353	956	473	1,769	428	7,296

Source: Danmarks Statistisk. Statistisk Taberværk IX. *Grønland—Folke og Boligtællingen, 31 december 1965*, København: 1969, pp. 97-103.

TABLE 16

Residences by Period of Construction—1970

Region	Before 1948		1948-1952		1953-1955		1956-1960		1961-1965		Total
	Towns	Villages	Towns	Villages	Towns	Villages	Towns	Villages	Towns	Villages	
Southwestern Greenland	171	127	139	57	145	97	177	100	453	71	1,537
Open-Water	248	91	227	71	293	69	349	107	918	100	2,473
Disko Bay	291	91	172	47	183	56	365	54	556	27	1,842
Hunting Districts	110	127	69	57	106	69	135	191	149	180	1,193
TOTAL:	810	436	607	232	727	291	1,026	452	2,076	378	7,045

Source: Ministeriet For Grønland, "Folke—og boligtællingen i Grønland, 31 december, 1970," *Meddelelser Fra Økonomisk-Statistisk Kontor Nr. 25*, November 1972. See Bilagstabel 2.

categories. It is not entirely clear why this is the case. It may be a result of enumeration oversights in the 1965 census which were corrected for the 1970 census. Nevertheless, the figures do provide some appreciation for the efforts of the Danish government in attempting to improve living conditions in Greenland.

At the end of 1965, the number of residential units in the 'Open-Water' region was probably about 2,473. TABLES 15 and 16 both show significant increases in the number of units completed during the 1961-1965 period compared to other earlier time periods. The removal of older units also strained the available housing capacity.

In the 'Open-Water' region, the population grew from 11,695 in 1960 to 13,929 in 1965—an approximate 20 per cent increase. In the next five-year period, i.e. 1965-1970, 2,813 residential units were added to existing residential stock. The 'Open-Water' region accounted for almost 57 per cent of the total (1,559 in towns and 33 in villages). This rapid development in residential capacity was essential to keep pace with population growth. By 1970 the regional population had increased by another 4,781 persons to 18,710. This was a gain of almost 35 per cent. Thus government housing programs appear to have kept pace with concentration of population in the 'Open-Water' region.

Much of the construction is carried on with a series of generous loans (no down payments, 33-year repayment periods, extra subsidies and grants for each additional child, etc.) from both central government and commune authorities. Appendix IV shows that the number of units which were constructed in the 1965-1972 period and which were government

financed, was 3,414.

With increasing population growth, the high cost of installing water and sewage lines and a general lack of level building sites, construction shifted to multi-family residences or apartment houses. FIGURE 21 demonstrates this trend. Single-family units are declining not only in the 'Open-Water' region, but in all of Greenland. Since 1968, apartment houses now provide most of the residential capacity. The 'Open-Water' region is the area where most of these apartment residential units are found.

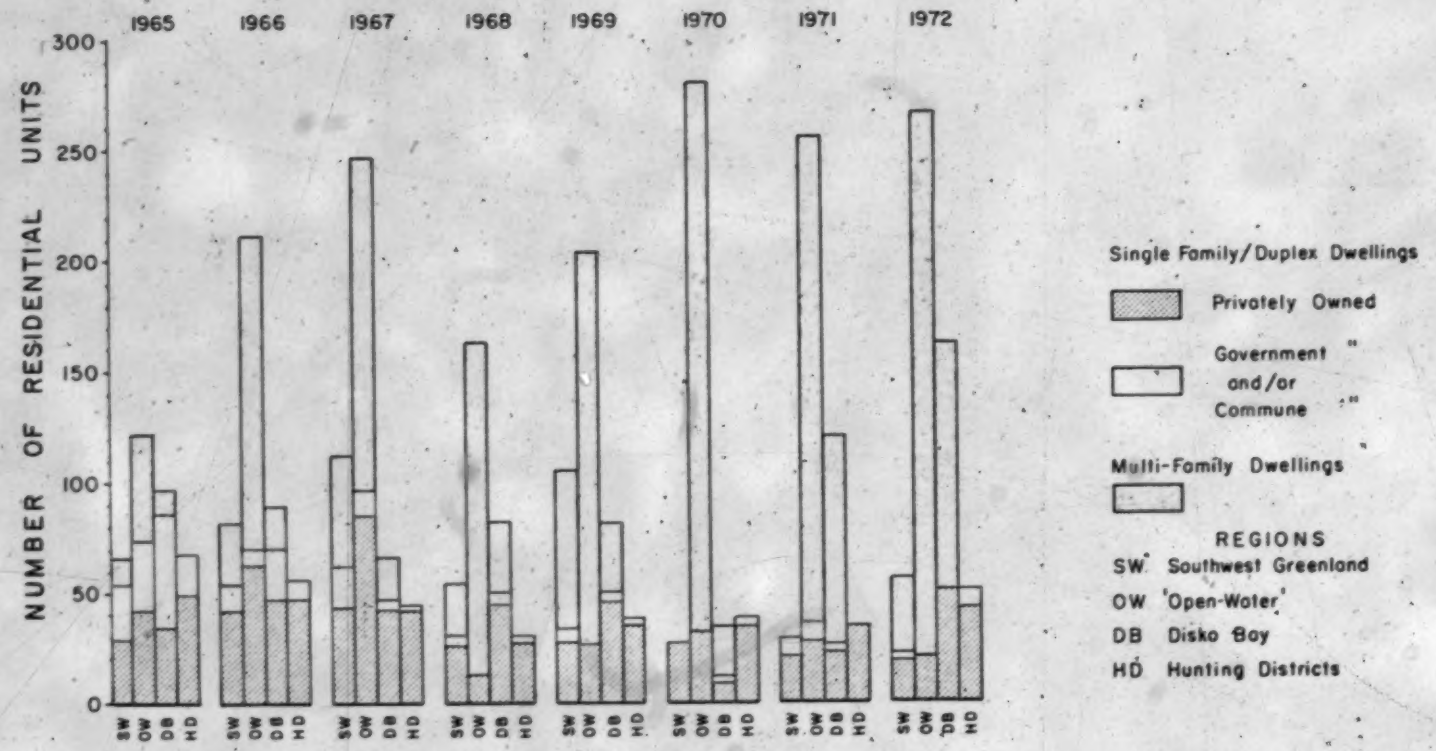
With industrialization beginning in Disko Bay, a similar trend has started in that region. In the Hunting Districts (Umanak, Upernavik, Thule, Angmagssalik, and Scoresbysund), the sealing economy does not require apartment houses since emphasis is on dispersed settlement.

The G-60 Plan called for completion of 2,122 residential units by 1970. The Plan has, for the most part, been adhered to as seen in Appendix V.

Geographic mobility of labour. The development of internal migration patterns from villages and settlements to towns is a phenomenon that has existed for many years in Greenland. In the period between 1930 and 1950, town populations doubled in Southwestern Greenland in the 'Open-Water' region, and in the Disko Bay area. Village populations remained about the same, even though the general movement from village to town had been approximately 150 persons per annum. This resulted from the fact that throughout the whole area, ten villages and settlements had been closed down. By 1950, the population had shifted so that one-half lived in

Fig. 21

GOVERNMENT - SUBSIDIZED RESIDENTIAL CONSTRUCTION



SOURCE: GRØNLAND. Årsberetning (1968, 1969-1970, 1971-1972, 1973)
Ministeriet For Grønland. Boligbyggeriet I Grønland 1972. Meddelelser Fra Økonomisk-statistisk Kontor, No. 32, Januar, 1974, pp. 3-5.

towns as opposed to less than one-half in 1930.

The Greenland Commission encouraged village/settlement-to-town migrations. By 1960, populations in the fishing villages of West Greenland were still at the same level as 1930—but the number of fishing villages had declined by half. Town populations, however, had experienced growth in the order of three or four times the level extant in 1930. TABLE 17 summarizes population changes as a result of migrations that took place during the major portion of the Greenland Commission's planning period.

These data give some indication of considerable changes that took place in the period covered by the Greenland Commission Report recommendations of 1950. In most cases, towns experienced net in-migrations, while most villages and settlements had net out-migrations. The net regional movements indicate that people often migrated to other regions. This was certainly the case in the Hunting Districts. Disko Bay and the Southwestern region also had net-out-migrations. The 'Open-Water' region had very few people leaving the region. Although there may have been considerable inter-communal migrations, job opportunities must have been attractive to limit the out-migration to only 48 people.*

During this period, the population increased by 27 per cent—from 22,148 to 28,171. The towns acted as the safety valves, draining off

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*The towns did not absorb total village and settlement out-migration. Many Greenlanders went to Denmark for higher education and training in keeping with the policy of bringing Greenland up to the level as found in 'Denmark South.'

TABLE 17

Regional Migration in Greenland, 1949—1958
(persons born in Greenland)

Region	Total Net Migrations			Net Regional Migrations
	Town	Villages	Settlements	
Southwest	+512	-137	-517	-142
Open-Water	+941	-151	-838	- 48
Disko Bay	+604	-183	-582	-161
Hunting Districts	+237	-232	-573	-602
TOTAL:	+2,294	-703	-2,510	-919

Source: *Beretninger vedr. Grønland*, Nr. 6, 1960, "Statistiske oplysninger om udviklingen i Grønland 1948-58," p. 11.

excess population increases in villages and settlements. The towns also had high birthrates.

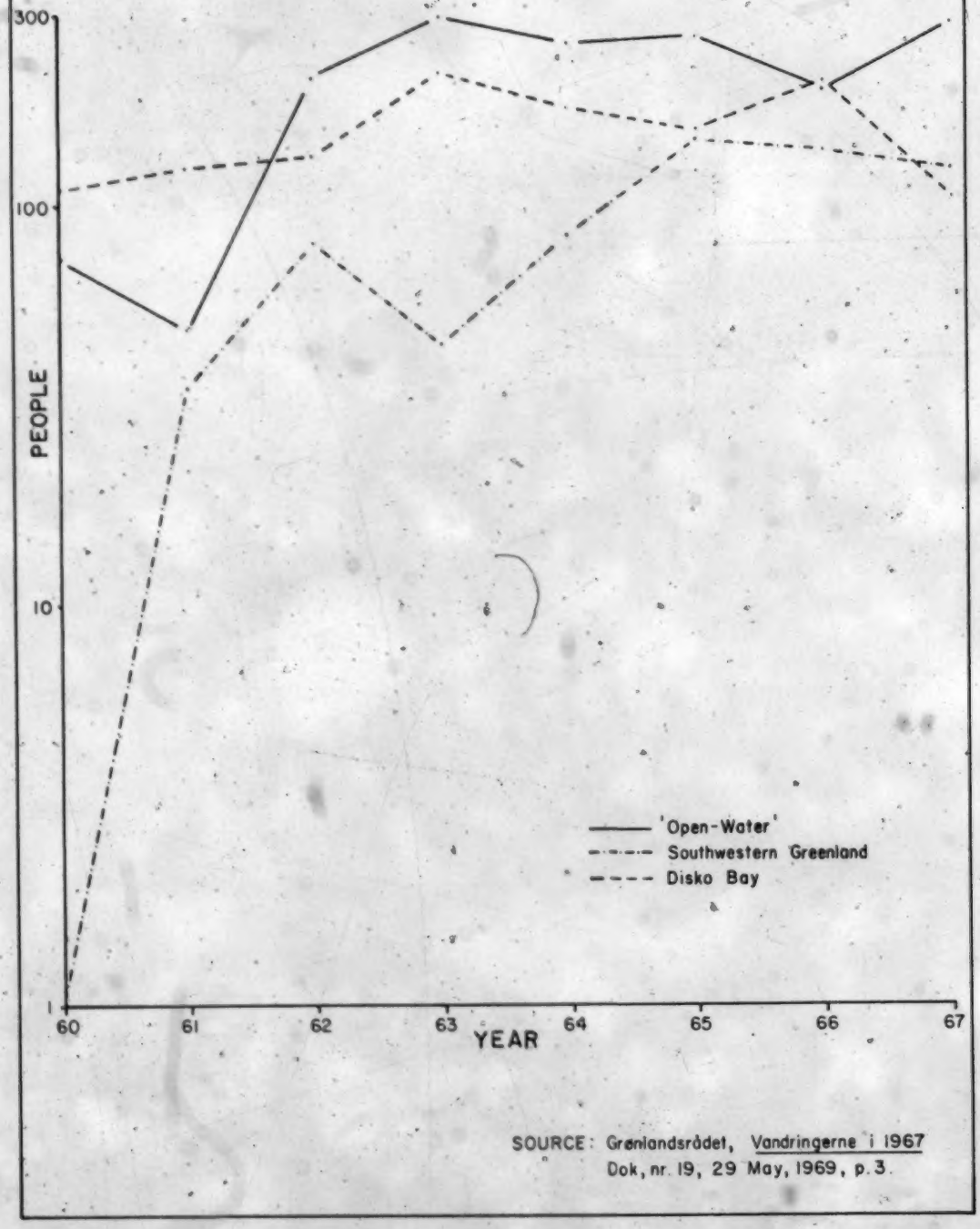
The Greenland Commission encouraged these migrations by emphasizing jobs, cultural advantages, and the greater benefits that result from being closer to more educational and health facilities. Another method was to restrict investments in fishing villages and settlements. In the later 1950s, subsidies for housing were prohibited in about one-third of the fishing villages. In 1954, the Greenland Provincial Council began giving bonuses, or migration grants, for families moving from "non-designated" to "designated" places. As a result, the average annual number of residential units in the fishing villages (Southwestern Greenland, 'Open-Water' region, and Disko Bay) fell from an average of 80 in the 1952-1955 period, to an average of 40 in the 1961-1965 period. Annual construction of homes in "towns" during these same two periods increased from an average of 150 to an average of 235 (Grønlandsrådet, 1968, p. 4).

The rate of migration has increased during the 1960s. FIGURE 22 compares out-migration from villages of the three major regions in West Greenland. The 'Open-Water' region has had the highest rate of village out-migration compared with the other two major regions in West Greenland.

By the end of 1967, almost 1,600 persons had migrated from 'Open-Water' villages. For the villages, this represented a population decline of approximately 25 per cent. Data available for 1967, and considered as being representative of this trend, imply that much of this migration was contained within the 'Open-Water' region. Towns received 305 people

Fig. 22

NET OUT-MIGRATIONS FROM VILLAGES, 1960-1967



SOURCE: Grønlandsrådet, Vandringerne i 1967
Dok, nr. 19, 29 May, 1969, p. 3.

from their respective communal villages. Neighbouring communal villages accounted for 73 persons with another 51 individuals coming in from villages beyond neighbouring communal villages. People entering "towns" showed a propensity to migrate from outside the region. Thus "neighbouring" town in-migration was 167; people from "other towns" numbered 45 (Grønlandsrådet, 1969).*

Another important aspect of these movements is the age structure. The need for a vigorous labour force capable of working long hours in processing plants and at sea (often under harsh weather conditions) implies the need for a youthful labour force. In 1967, 55 per cent of the migrants to 'Open-Water' towns were under 20 years of age. While this means additional strains on the various social institutions, i.e. schools, hospitals, recreational facilities, etc., it also suggests that a required labour force will be available in the future.

The labour force requirement, necessary as a result of planned investments in the "export industry," was estimated to be 1,915 in the 'Open-Water' towns by 1970. This primary and secondary labour force for all of West Greenland was calculated to be 3,115 workers by that date. Therefore, the 'Open-Water' region is especially significant in that 61 per cent of the productive labour force of all Greenland would be

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*The tendency for people from villages to move to their communal town and for the more "urbanized" town dwellers to make inter-communal migrations is supported from a more thorough analysis of population and migration in Greenland. See Udvalget For Samfundsforskning i Grønland, *Befolkningssituationen i Vestgrønland*, København: 1963, pp. 55-57.

concentrated in this area (Grønlandsrådet, 1965, p.3).

While perhaps not as immediately pressing as the need for fishermen and processing workers, future requirements for a more technoligically skilled labour force must be considered. Government policy attempts to fill all positions with Greenlanders, but this is hardly possible in light of present time horizons. Of a total labour force of 13,025 in 1966, 2,665 were Danes who held the better paid positions by virtue of their advanced education and training. Formal and on-the-job training can only be obtained in the larger towns. It is estimated that by the end of the late 1970s, the "foreign" Danish labour component will have fallen significantly as more and more Greenlanders begin to take over technical and management positions (Bornemann, 1969, p. 169).

KGH's Pricing Policy

In previous sections distinctions have been drawn between the terms *indhandling* and *udhandling* in the Greenland economic milieu. Probably one of the most sensitive issues in the modern economic development of Greenland has been the geographic differences in *indhandling* prices. Such a system was initiated in 1959. It is beyond the scope of this study to detail the lively debate that has ensued on this topic. The reader is referred to the *Beretninger vedrorende Grønland*, "Grønlands Landsråds Forhandlinger 1958" (Nr. 2, 1958; Nr. 3, 1959).

In the Greenland Provincial Council, concern was expressed over effects that such a proposal would have on the fishing industry. Indicative of KGH's determination to effect such a change, was the Director's rationalization as expressed at a meeting of the *Landsråd*

(Provincial Council) in 1959. A portion of the Director's remarks is quoted below:

> Lately, the question of "price differentiation" has been popular. Like everything else that is new and untried, most people reject it without investigating the relevant factors. To many people, price differentiation represents something that will destroy the little places before they get a chance to grow . . . .
>
> The system today:
>
> For the most part the same price is paid for all traded-in products in Greenland, regardless of place, time of year, etc. There are some slight differences but these are of little consequence.
>
> There are two things to keep in mind when price differentiation is discussed:
>
> 1. All Greenlandic production income goes into a common fund. . . . Since production must pay for itself, a deficit in one place must be covered by profitable production in other places within the accounting process.
> 2. Furthermore, large scale production makes possible cheaper costs for each unit of produced product. And cheaper costs could mean higher prices for fishermen.
>
> One example can illustrate this claim:
>
> — At a little fishing station 50,000 kilos of split cod are traded-in. The weighman receives 5,000 kr. a year in wages. Clearly we can see that for every kilo of cod, 10 øre goes to the weighman. This is an expense that the fishermen—or in other words the Sales division—must pay.
>
> — A large fishing station receives 500,000 kilos of cod. The weighman here, perhaps, receives higher wages, more overtime pay, etc., so that he makes 10,000 kroner a year. Even though this weighman receives twice as much in pay as the first weighman, we can see that out of each kilo of fish at the large fishing station, only 2 øre is taken by the weighman (author's translation). (*Beretninger vedrorende Grønland*, 1959, pp. 273-278.)

The Director then went on to detail two alternative methods for increasing profits at a small place: 1) rationalize fishing operations, or 2) increase the fishing effort. The first was not considered possible since 60 fish processing places could not be legally closed down. The

second alternative implied too great an increase in investment for a expected returns.

While the above example illustrates the problems in attempting to reach scale economies for lowering unit production costs, other factors can also be cited. For example, shrimp boats operating in the Narssak region work year round, travelling long distances to shrimp beds. The yields are somewhat uncertain and because the sea bottom is very uneven, fishing nets are often ruined. The traded-in price—or *indhandling* price—is, for example, one krone or kilo, the same as in Christianshåb where shrimp are also taken. The Christianshåb shrimp operations, however, are much more profitable because they are seasonal, i.e. operations only take place in summer. Not only are the fishing grounds close to Christianshåb, but the sea bottom is smooth and therefore replacement costs for nets are much less than in Narssak. The deficit production at Narssak must be paid for by the more profitable Christianshåb fisheries. Consequently, a single price system can be considered unfair under these types of conditions.

Geographic price discrimination could be applied to places where production costs were greater. The aim would be to concentrate production at larger places, without denying the right of some individuals to continue a way of life at smaller places. It would appear that this can be considered a cost that village residents would have to bear in choosing to remain at smaller and operationally unprofitable places.

Three types of places with a sliding scale of *indhandling* prices were subsequently established:

A) Places that were ports of call for ships sailing out of Greenland waters with export products.

B) Places that were not major ports of call for collection of export products, but had modern facilities with profitable operations.

C) Places that do not have as large a scale of production as those in group "B", but which, nevertheless, have production costs that are lower than average.

It was estimated that there were at least 20 places along the West Greenland coast where less than 50 tons of salted fish were produced annually.

The proposed geographical price discrimination, or "differentiation," system was further justified as being beneficial with reference to conditions surrounding the fishing industry and an improvement in intra-communal freight operations.

Fishing operations and processing. Of the 60 fishing villages along the West Greenland coast, many were regarded as being inefficient because facilities for off-loading catches were inadequate. As a result of slow off-loading (often caused by tide changes forcing a boat to wait in deeper water until it was possible to come into a dock) fish sometimes spoiled. Another problem was that fish storage facilities did not have the necessary capacity when catches were good. Primary processing (salting) was often delayed at smaller places because the necessary labour force was not available. Many of the fish houses were not heated and in the winter time this could impede salting since fish, in a frozen condition, cannot "draw" the salt.

KGH's intra communal freight operations. KGH encountered numerous problems in its communal freighting services. Scheduling shipments of salt to fishing villages was difficult. Boats were often empty of any cargo on return voyages from these places. In the fall, when processed and semi-processed fish had been prepared, the commune boat had to return. On the way into a fishing village, necessary consumer goods, i.e. the *udhandling* products, often could not be accommodated because of the volumes that were in demand. It was pointed out that in central towns, warehouse capacities were often under-utilized, processing plants could be heated (which meant no loss of work time because of bad weather conditions), due to more sophisticated equipment, a greater recovery of fish offal was possible, and finally, minimum costs were incurred on the handling of salt (Rosendahl, 1961, pp. 8-10).

In Chapter III some problems that KGH encountered in attempting to balance its trading accounts were discussed. Briefly, the dilemma was the government mandate that supply services be maintained at all settlements. Boserup, in his *Økonomisk Politik I Grønland*, has compared towns and all other places in terms of the percentage shares of the government grant for maintenance of the supply system. For one point in time, 1959, he shows that transport of raw materials from *udsted* to town and the return flows of consumer goods to an *udsted*, have accounted for 12 per cent of total distributional costs involved (Boserup, 1963, p. 442).

In order to illustrate a little more precisely this expensive maintenance of villages and settlements, data were gathered regarding various expenses and tonnages transported for one of KGH's district

commune boats. These boats are usually restricted to supply runs to various inhabited places within the commune, back-hauling processed and semi-processed products to a central town, and some general passenger service. Sukkertoppen commune was chosen as being representative and also because only one boat had been attached to the commune. (In other communes, two or three government boats often shared these duties for varying periods of the year.) *Finhvalen*, a 35-ton boat with a 90 h.p. motor, served the district for five years—1952-1957. It was then transferred to another commune and *Nordlyset* (60-ton, 90 h.p. motor) was brought in as a replacement. For both vessels, all the expenses have been summed, e.g. fuel, salaries, food, repairs and maintenance, etc. Volumes of *indhandling* and the volumes of salt/ice were also extrapolated.*

In FIGURE 23 the relationships between boat expenses and volumes of traded-in products (*indhandling*) and salt/ice movements to villages/settlements within the Sukkertoppen commune are compared. It can be seen that boat expenses have risen steadily with only few exceptions since 1952. *Indhandling* had only a modest growth up to 1960. Since then it has declined markedly. Salt/ice reflects periodicity in the fluctuating cod catch. (*Indhandling* does not have as marked fluctuations because the data include other traded-in products such as seals, which do not require salt or ice in processing. However, the cod catch is, nevertheless, the major component of the total amount of *indhandling*.)

Another factor explaining the downward trend of *indhandling* and

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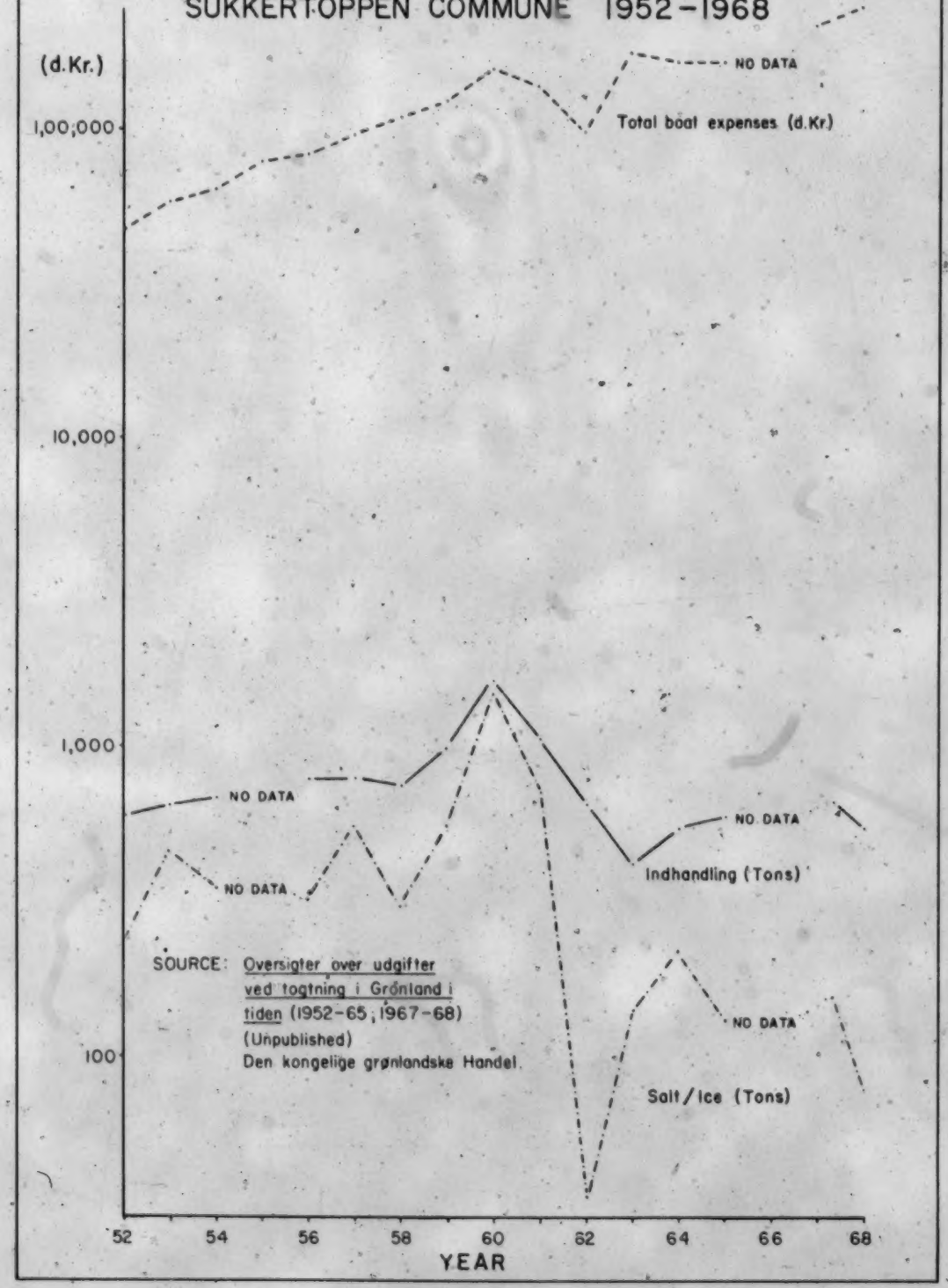
*In later years, ice often replaced salt as demand increased for frozen fish.

Fig. 23

PERFORMANCE SCHEDULE OF KGH'S SUPPLY BOAT: SUKKERTOPPEN COMMUNE 1952-1968



salt/ice, is the gradual population decline as fishermen prefer to land catches at major towns where the highest prices are found. This trend increases the net deficits since many of the costs of the commune boat are fixed. Once most of the fishermen have moved to more favourable *indhandling* places and only a residual population remains at an *udsted*, KGH will then petition the Ministry for Greenland for permission to cease trading and other services. Negligible or insignificant production is cited as the major reason. The Ministry will then begin the task of arranging to close down the village and re-settle the population in a commune town.

Investments in the 'Open-Water' Region

The actual decision to develop the 'Open-Water' region had already been made in 1959. As stated earlier, G-60 merely sanctioned industrialization programs already initiated in the late 1950s. The signs of rapid population growth with a large available work force, structural deficiencies in the fishing fleet, the failure of private industry to develop Greenland, and a lack of more sophisticated processing facilities were apparent.

The first move towards industrialization was a bill passed by the *Folketing* (Parliament) in June 1959. Fifty-seven million kroner were scheduled for investment in selected towns over an eight-year period. These towns included the four 'Open-Water' ports and Jakobshavn and Christianshåb in the Disko Bay region. These latter two towns received 30 per cent of the monies allotted, and of this amount 81 per cent was expended in the first two years, i.e. 1959 and 1960. The 'Open-Water'

ports, however, had more projects undertaken in the early 1960s. TABLE 18 shows a projected summary of expenditures as planned by the 1959 authorization.

Categories during this period are in the area of economic infrastructure. Planning beyond 1965 (1966-1970) indicates additional planning for more direct productive activities and social overhead capital. Aware of future migrations of young, working-age people, investment would also have to reflect a continuing provision for residential and advanced educational facilities. The intent was to retain the labour force by offering suitable housing, and at the same time upgrading the labour force quality.

In the period 1966-1970 investment in 'Open-Water' ports was scheduled at 152,860,000 million kroner against 20,970,000 million kroner in South Greenland, and 29,040,000 million kroner in Disko Bay (Grønlandsrådet, 1965b, p.4). During this period the 'Open-Water' towns would receive a total of ten long-line boats and one deep-sea trawler for each of the three towns—Frederikshåb, Sukkertoppen, and Holsteinsborg. Godthåb was scheduled for two trawlers.

SUMMARY

Once the Danish government made the decision to industrialize the 'Open-Water' region of Greenland, plans were developed which would attract the necessary labour force. In this connection, an ambitious housing program was undertaken. Older and unsuitable residential units were removed and the construction rate forced to keep up with both the

TABLE 18

Summary of Expenditures in the Industrial Program, 1959-1965

(1,000 kr.)

	1959	1960	1961	1962	1963	1964	1965	Total
Jakobshavn	3400	5275	1800	550				11025
Christianshåb DISKO BAY	2250	1550	450					4250
OPEN WATER								
Holsteinsborg								
—Deep water pier				200	800	1500	200	2700
—Small boat harbour			800					800
—Storage tanks				150				150
Sukkertoppen								
—Deep water pier and embankment			300	2700	1500	500	200	5200
—Mooring facilities						100		100
Godthåb								
—Harbour		600	3000	2300	300	1700	300	8200
—Factory				500	2500			3000
—Water					275			275
—Electrical generating plant			190	285	750			1225
—Civil servants' residences				100	600			700
Frederikshåb								
—Deep water port	100	1000	1300	300				2700
—Factory					500	1700	650	2850
—Electrical generating plant					800	2100	200	3100
—Small boat harbour			300					300
—Civil servants' residences					100	550	50	700
—Industrial jetty	600							600
—Water			100	1000	700			1800
Sub Total:	6350	8425	8240	8085	8925	8050	1600	49675
Contracted equipment and reserve funds:	2150	1000	1050	1050	1050	825	200	7325
TOTAL:	8500	9425	9290	9135	9975	8875	1800	57000

Source: Folketinget 1958-59. "Lov om opførelse af Fiskeindustrianlæg m.v. og om bygning af havne i Grønland," *Lovforslag Nr. 69, Blad nr. 152*, 22 January 1959, af Ministeren For Grønland.

in-migration and natural increase of the 'Open-Water' region. In the period 1965-1970, the 'Open-Water' region accounted for 57 per cent of all the residential construction in Greenland. The 'Open-Water' region also takes increasingly larger proportions of all apartment house construction in the period from 1966-1972, inclusive.

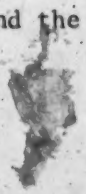
The 'Open-Water' towns have drawn heavily on their village hinterlands to satisfy their labour demands. This is a critical factor since the first five-year plan indicated that by 1970, 1,915 labourers or 61 per cent of the total planned labour force would be concentrated here in the 'Open-Water' region.

The proposed *indhandling* program would have the effect of concentrating landings of private fishermen in major towns. The economic costs of sustaining a fishing village are high since scale economies in operations cannot be met. The overall effect of this spatial discrimination would be to close down those uneconomic fishing villages.

The planned industrial program, beginning in 1959, would be restricted to Disko Bay and the 'Open-Water' region. Disko Bay would receive only 30 per cent of the allotted 57 million kroner. Within the 'Open-Water' region, investment in direct productive facilities would be 14 per cent of the 41,725 kroner available for investment. The remaining funds would be used to develop the economic infrastructure. In the period from 1966-1970, planned investment in the 'Open-Water' region would be at least six times more than either South Greenland or Disko Bay.

As a result of these investments, real income for each person born

in Greenland would increase from 1,650 kroner in 1960 to 6,800 kroner in 1970. By 1972, an additional 1,050 kroner would raise these real incomes even further to 7,850 kroner. In the 1968-1969 fiscal year, the 'Open-Water' region would produce more money from wage income than the other major regions — Southwest, Disko Bay, and the Hunting Districts.



Chapter V

ANALYSES OF DEVELOPMENT PLANS

The success of regional development plans can only be evaluated by examining data which directly relate to those development plans. At the same time, it should be noted that development, or success, with respect to aspects of the plan, can also bring about other problems.

LABOUR FORCE DEVELOPMENT

The results of those migration incentives—jobs and housing—that were made available in the 'Open-Water' region, can be analyzed through detailed records of inter-communal migrations. These data have been further refined to show net movements (see Appendix VI).

In the early years, i.e. 1953-1961, in-migrations to the 'Open-Water' region from the rest of Greenland averaged only slightly more than 200 persons per annum. In the period from 1962-1972 (being approximately equivalent to a *de facto* time of available data for G-60) the rate of in-migration had increased to a yearly average of more than 360 persons. During the 1953-1961 and 1962-1972 periods, there had been return flows from the 'Open-Water' region to other communes. In the 1953-1961 period, mean yearly out-migrations were 153 whereas in the 1962-1972 period, the

mean was only slightly higher. Thus the effect of G-60 in stimulating heavier in-migration is apparent. For the whole period, i.e. 1953-1972, almost 6,000 persons entered 'Open-Water' communes while the number of out-migrants was in the order of 3,300.

The Regional Pattern

The four communes have drawn migrants from all other communes during the period 1953-1972. In some years though, 'Open-Water' communes had no migrants from other communes. Similarly, not all of the communes outside the 'Open-Water' region received migrants from that region (see Appendix VI).

Of the three other regional groupings in Greenland—South Greenland (Nanortalik, Julianehåb, Narssak, and Ivigtut communes), Disko Bay (Egedesminde, Godhavn, Vaigat, Christianshåb, and Jakobshavn communes) and the Hunting Districts (Umanak, Upernavik, Thule, Angmagssalik, and Scoresbysund communes)—the Disko Bay region contributed slightly more than 40 per cent of the total in-migration. Approximately equal numbers of the out-migrating population from 'Open-Water' communes went to South Greenland (619) and Disko Bay (554). In both cases the proportions were less than 20 per cent of total out-migrating population.

In the Hunting Districts, the attraction of the 'Open-Water' region is obvious. For the period under consideration, numbers returning to these Hunting Districts from the 'Open-Water' region were less than one-half of in-migrants to 'Open-Water' communes.

These data also reveal another interesting aspect: within the 'Open-Water' region itself, there has been a considerable amount of

internal migration. Although these data do not indicate final destinations within a commune, i.e. *boplads* (settlement), *udsted* (village), or *by* (town), most intra-communal migrations were toward towns (see above, Chapter IV). TABLE 19 summarizes migration trends over the 20-year period, 1953-1972, for the 'Open-Water' region.

Additional explanations may also consider resource bases in the other regions. In South Greenland, while the *Storis* retards expansion of the fishing industry, KGH maintains (in Julianehåb town) a processing plant for salting cod as well as warehouse facilities for storage of fish products. A private company is also located here. It processes, in addition to cod livers, salmon and other various fish products. In Narssak town, considerable industrial capacity exists in the form of traditional filleting, salting, freezing, and the canning of prawns (shrimps). Since some sheep raising is also possible in South Greenland, an abattoir has been built to service this industry. As part of an effort to widen the economic structure in South Greenland, a mink farm was established using waste products from the fish and shrimp factories as feed. The combined effect of these plants, in both Julianehåb and Narssak, has been to "catch" migrants from the more depressed portions of South Greenland and thus lower contributions to 'Open-Water' communes.

The Disko Bay region has never had the varied economic base that is found in South Greenland. For the most part, traditional inshore codfishing was subsidized by gathering prawns (shrimp). The season for taking prawns (shrimp) is between late May to early November. Codfishing is also seasonal, lasting from mid-June to mid-October. Other

TABLE 19

Summary of Communal Net Migrations, 1953-1972

The 'Open-Water' Region

(people born in Greenland)

Commune	Frederikshåb		Godthåb		Sukkertoppen		Holsteinsborg		Total	
	In from	Out to	In from	Out to	In from	Out to	In from	Out to	In from	Out to
Nanortalik	42	27	196	30	26	33	38	39	302	129
Julianehåb	50	87	135	73	47	51	40	61	272	272
Narssak	37	45	118	55	15	28	27	34	197	162
Ivigtut	32	40	6	5	12	7	2	4	52	56
Frederikshåb			187	97	65	16	50	61	302	174
Godthåb	96	137			110	360	96	307	302	804
Sukkertoppen	21	70	333	122			131	136	485	328
Holsteinsborg	50	49	296	104	153	100			499	253
Egedesminde	44	59	537	36	119	12	422	55	1122	162
Godhavn	9	13	87	79	47	15	37	12	180	79
Vaigat	179	6	292	24	79	27	226	33	776	90
Christianshåb	14	9	52	18	6	33	24	18	96	78
Jakobshavn	61	30	139	52	53	43	91	20	344	145
Umanak	32	17	131	66	50	23	59	16	272	122
Upernavik	57	22	164	25	68	35	91	26	380	108
Thule	22	19	45	32	16	12	21	8	104	71
Angmagssalik	17	14	169	41	49	21	36	58	271	134
Scoresbysund	23	16	11	15	8	12	14	23	56	66
TOTAL:	786	660	2898	834	923	828	1405	911	6012	3233

Source: Ministeriet For Grønland, "Mandtalisterne," 1953-1972. (Unpublished)

types of fishing are actively pursued to broaden incomes. These include salmon and Greenland halibut. Both are products that are always in high demand. The gathering of down from rookeries and better sealing possibilities than in the more southerly regions are other alternatives within this predominantly cod/prawn complex. A notable exception, however, is Kutdligssat. This coal mining town has been discussed earlier.

The data in Appendix VI indicate heavy out-migrations from the Disko Bay region to Frederikshåb and Godthåb for 1966 and again in 1969, 1970, and 1971. In 1972, Holsteinsborg received 123 migrants. This was apparently the residual group after previous out-migrations. It is interesting to note, in this connection, that Kutdligssat's population for 1972 was 589. Of the total migration from Vaigat commune in 1972 (in which Kutdligssat is the only inhabited place) only 31 per cent went to the 'Open-Water' region. Assuming that most 'Open-Water' destinations were major towns, it would appear that a majority of migrants eschewed the relatively more densely populated and industrialized towns for smaller and/or other places located in Disko Bay.

The Hunting Districts of North and East Greenland are primarily oriented towards sealing. This type of economy cannot sustain a large, sedentary population. Generally, mobility, low-density population levels, and dispersed settlements are required in order to maintain the resource base. These conditions also mean low regional population levels.

The high birthrates during the post-war years (reaching as high as 50 for every thousand Greenlandic-born women) could not be supported by the resource capacities of these Hunting Districts. This becomes evident

when native-born populations of the Hunting Districts are compared with those of South Greenland. For three time periods, 1950, 1960, and 1972, South Greenland had respectively 4,475, 5,780, and 7,166 persons. In the Hunting Districts, native born populations for the same time periods have been 4,776, 6,170, and 7,555, respectively. The differences in the three periods have varied from 301 in 1950 to 390 in 1960 and to 389 in 1972. Thus, these Hunting Districts have always maintained a higher population (5-6 per cent) than that found in South Greenland.

Although South Greenland's total net contribution to the 'Open-Water' region was 227 persons, the net in-migration from the Hunting Districts was 581. When the return flows to these two regions are considered, a larger number (619) returned to South Greenland. The number returning to the Hunting Districts (501) was less than half the number that left.

The Kutdligssat experience and trends in the Hunting Districts may be suggestive of certain negative predispositions of Greenlanders towards urbanization. Return flows (as in the case of Northern and Eastern Greenland) may also reflect attractions related to an erratic resource base. (Certainly, in Greenland, where shifts in the catches of fish and sea mammals fluctuate from year to year, migrations would be excellent surrogates.)

Another explanation may involve preferences by native Greenlanders for the more simple and less complicated life of an *udsted* or *bygd* as opposed to a relatively more urbanized way of life in the town (*by*). The data then, may also reflect these rural preferences.

Migration rates to the four communes have varied throughout the period under discussion. In FIGURE 24, annual total in-migration to each 'Open-Water' commune has been treated as a cumulative percentage of total in-migration for the 20-year period. By 1962 (the mid-point for the period) only two communes had achieved more than 25 per cent of their total in-migration. In 1964, only Godthåb commune had passed the 50th percentile. Two years later, Sukkertoppen and Holsteinsborg reached this level. In 1968, Frederikshåb passed the 50th percentile. Generally, in-migrations since 1962 have reflected exponential rates. This tends to correspond with the G-60 planned program of industrialization. Although the program began officially in 1966, in fact, many of the changes had already been initiated as early as 1959.

Godthåb has experienced greater in-migrations than any other commune. Almost half of the 6,012 in-migrants to the 'Open-Water' region went to Godthåb. This extremely heavy rate is a function of heavy demands made for labour in sectors other than processing. Part of this labour demand has its roots in the administrative aspects that Godthåb town represents as the "capital city" of Greenland.

Holsteinsborg received slightly less than one-quarter of the total. Sukkertoppen's share was about 15 per cent of the total with Frederikshåb taking about 13 per cent. Sukkertoppen and Holsteinsborg received in-migrants at a more rapid rate than Frederikshåb. Undoubtedly, this is a result of the proximity to Disko Bay places and the Hunting Districts. Since 1967, Frederikshåb's in-migration has proceeded at an increased rate. This probably results from the fact that a large KGH processing

plant was completed and began operations in that year.

The Pattern of Employment

With the exception of mining, the major sectors of economic activity have all shown increases. The pattern, however, is by no means uniform, both sectorally and geographically.

The overall effect of G-60 was to develop employment capacities in sectors other than fishing. G-60 is now nearing completion of its ten-year official planning period that commenced in 1966. Although the quintennial "Census of Economic Activity" for 1975 would provide some excellent data for comparative purposes with 1965 and 1970, the 1975 data have, unfortunately, not yet been published. Data do exist, however, for 1965 and 1970. It is, therefore, possible to analyze in some detail changes during the first half of G-60. (Appendix VII is a list of major economic sectors with selected examples of activities or areas of employment.)

In TABLE 20, the four 'Open-Water' communes are compared with respect to employment in towns as well as in the villages or communes. Total employment in the four communes grew by more than 2,500, or 50 per cent, in the five-year period, 1965-1970. If the four towns are considered alone, the growth rate is even higher—61 per cent. Employment in villages declined, in spite of the fact that some villages were closed down or abandoned.

Within a commune, some inter-village migrations may have occurred, but the closing down of various villages apparently did little to hinder the overall decline in aggregate employment opportunities in those

TABLE 20

Employment in the 'Open-Water' Region by Major Occupational Groups, 1965 and 1970

Sector	Frederikshåb		Godthåb		Sukkertoppen		Holsteinsborg		
	Town	Villages	Town	Villages	Town	Villages	Town	Villages	Totals
Mining 1965	65	—	5	—	—	—	2	—	72
1970	20	1	1	—	4	1	—	—	27
Manufacturing 1965	57	11	248	16	113	17	216	—	678
1970	104	—	507	16	148	28	311	2	1116
Construction 1965	99	1	315	3	121	2	94	—	635
1970	192	7	570	—	205	8	165	—	1147
Public Works 1965	18	—	29	1	11	—	18	1	78
1970	18	1	25	—	20	1	21	1	87
Trade and Sales 1965	57	24	195	43	151	41	94	22	627
1970	129	30	365	42	104	35	159	18	882
Transportation 1965	55	5	293	6	47	4	78	5	493
1970	88	4	410	—	108	2	98	1	711
Services 1965	147	25	717	44	157	40	215	16	1361
1970	285	44	1426	53	281	65	348	7	2509
Fishing 1965	89	91	145	146	170	218	177	69	1105
1970	81	94	193	130	148	204	242	46	1138
Hunting 1965	5	11	12	5	1	1	3	4	42
1970	6	—	11	3	2	1	4	—	27
Total 1965	592	168	1961	264	771	323	897	117	5091
1970	923	181	3508	244	1020	345	1348	75	7644

Source: Danmarks Statistik. Statistisk Tabelværk IX, *Grønland—Folke—og Boligtællingen 31 december 1965*, København: 1969, Tabel 16, p. 52-54.
Danmarks Statistik. *Grønland—Folke—og boligtællingen 31 decenber 1970*, København: 1974, Tabel 2, pp. 12-14.

remaining villages. In Godthåb and Holsteinsborg communes, villages experienced declines, while Frederikshåb and Sukkertoppen commune villages showed only minimal increases (8 per cent in Frederikshåb and 7 per cent in Sukkertoppen). In the various towns, Godthåb (as might be expected) registered the highest gain (78 per cent), followed by Frederikshåb (56 per cent), Holsteinsborg (50 per cent), and Sukkertoppen (32 per cent).

Inasmuch as employment gains were greater in towns than in villages, the sectoral changes were subjected to a more detailed analysis using the shift technique.* (Basically this technique measures a sectoral rate of change against *total* employment rate of change.) The assumption is that all sectors grow at the same rate as that expressed for the total regional change in employment.) TABLE 21 describes these changes.

'Mining' and 'Hunting' had absolute declines while 'Manufacturing,' 'Construction,' and 'Services' had gains which were greater than the total regional change. Thus, assuming that 'Manufacturing' would gain in employment at the regional rate, an additional 340 people should have been added to the 1965 employment. In fact, the absolute change was an increase of 438 over 1965 which meant that employment in 'Manufacturing' had a relative upward shift of 98 persons. Expressed as a percentage, this was an approximate 13 per cent shift over the regional rate of change.

'Public Works,' 'Trade and Sales,' 'Transportation,' and 'Fishing' also had employment gains over the five-year period. 'Transportation,'

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*For a further explanation of this technique, see Charles M. Tiebout, *The Community Economic Base Study*, New York: Committee For Economic Development, 1963, p. 35.

TABLE 21

Employment Shifts in the 'Open-Water' Region by Sector and Town, 1965 and 1970

	1965	1970	Absolute Change	% Change	Expected Change	SHIFT Absolute Up	SHIFT Absolute Down	SHIFT Percentage Up	SHIFT Percentage Down	Towns	SHIFT Absolute Up	SHIFT Absolute Down	SHIFT Percentage Up	SHIFT Percentage Down
Sector:														
Mining	72	27	-45	-63	36		81		10.00			12		3
Manufacturing	678	1116	438	65	340	98		12.94			91		23	
Construction	635	1147	512	81	318	194		25.63			257		65	
Public Works	78	87	9	12	39		30		3.96			36		9
Trade and Sales	627	882	255	41	314		59		7.79		10		3	
Transportation	493	711	218	44	247		29		3.83		9		2	
Services	1361	2509	1148	84	683	465		61.43				336		85
Fishing	1105	1138	33	3	554		521		68.82		28		7	
Hunting	42	27	-15	21		36		4.76				10		3
TOTAL:	5091	7644	2553	50.15	—	757	757	100.00	100.00		359	359	100	100
Towns:														
Frederikshåb	592	923	331	56	361.71		30.71		8.78					
Godthåb	1961	3508	1547	79	1196.17	350.83		100.0						
Sukkertoppen	771	1020	249	32	471.08		222.08		63.48					
Holsteinsborg	897	1348	451	50	548.06		97.06		27.74					
TOTAL:	4221	6799	2578	61.1		350.83	350.00	100.0	100.0					

Source: —Danmarks Statistik. Statistisk Tabelværk IX, *Grønland—Folke—og Boligtællingen 31 december 1965*, København: 1969, Tabel 16, pp. 52-54.
—Danmarks Statistik. *Grønland Folke—og Boligtællingen 31 december 1970*, København: 1974, Tabel 2, pp. 12-14.

for example, gained 218 persons in five years. This was a 44 per cent increase over 1965, but the sector did not grow at the regional rate. Therefore, a downward, relative shift is said to have occurred by 29 persons or 4 per cent.

As indicated above, 'Manufacturing,' 'Construction,' and 'Services' were the fastest growing sectors. In the context of an increased emphasis on concentration/urbanization in the 'Open-Water' towns, the need for additional workers in schools, hospitals, various social aid bureaus, restaurants, hotels, and household help, is clear. Similarly, vast sums of money expended for residential and plant construction meant an influx of Danish labourers and craftsmen.

The emphasis on increasing manufacturing employment—a major target of G-60—was, unfortunately less successful. At the regional level, its growth was marginal. A separate sectoral analysis for the towns showed that growth was almost doubled (12.94 per cent regional; 23 per cent towns). In 'Construction' whereas the regional change was about 26 per cent, towns had a 65 per cent relative upward shift. The re-location of fishermen also showed a relative upward shift of 7 per cent in towns, while experiencing an almost 69 per cent relative downward shift at the regional level.

In spite of the better performance of the sectors at the town level, it is still questionable whether increases in value added to the basic resource, could generate a multiplier that would explain the large increase in employment in other sectors. The heavy injections of money into the economy are large-scale transfer payments made by the Danish

government.

The "imported" Danish labour is also often very expensive because it comprises the technical/professional fields. Not only do these workers enjoy higher salaries and wages than their Greenlandic counterparts, but in addition, if they remain in Greenland for at least two years, their federal income taxes are waived. (In a socialist country such as Denmark, income taxes are very high, often at the 50 per cent level.) Furthermore, provision of government housing for these workers offers rents which are lower when compared to Denmark proper (Bornemann, 1970, p. 25). This policy of developing Greenland's economy by attracting skilled Danish workers, means that costs for regional development must be substantially increased.

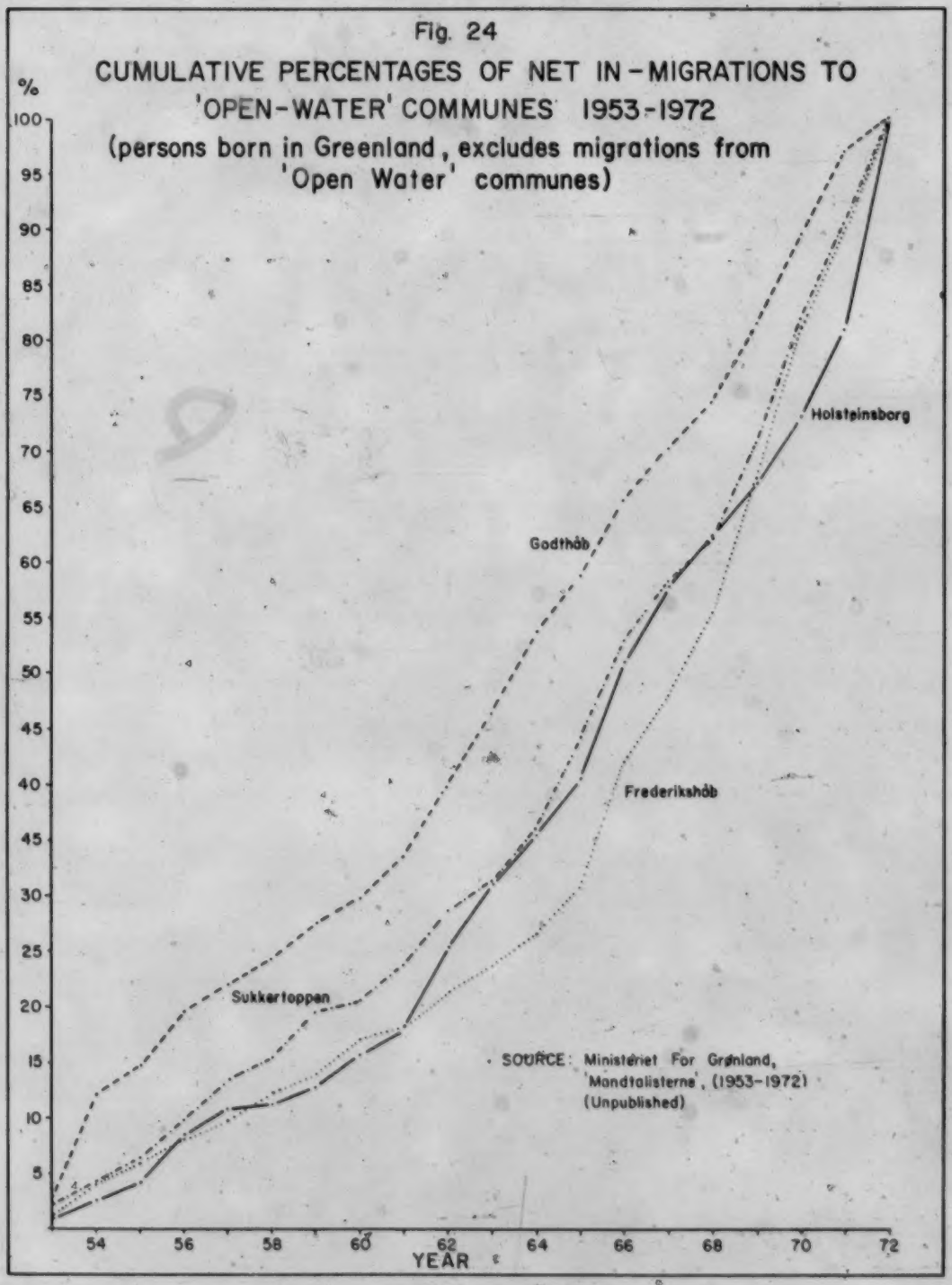
Much of this growth has been concentrated in Godthåb. In TABLE 21, employment changes with respect to the four 'Open-Water' towns have also been analyzed using the shift technique. What becomes immediately clear is the primacy of Godthåb. Although the other three towns have experienced substantial increases (56 per cent for Frederikshåb; 32 per cent for Sukkertoppen; and 50 per cent for Holsteinsborg), they were not able to increase employment as was the case with Godthåb. Frederikshåb came closest. Its absolute downward shift was only 31 workers short of the regional rate.

In FIGURE 24 Frederikshåb's in-migration curve begins to assume a more noticeable rate of change as the processing plant goes into operation in 1967. This would also seem to explain Frederikshåb's increase in employment to near the regional rate. Sukkertoppen and Holsteinsborg

Fig. 24

CUMULATIVE PERCENTAGES OF NET IN-MIGRATIONS TO 'OPEN-WATER' COMMUNES 1953-1972

(persons born in Greenland, excludes migrations from 'Open Water' communes)



do not have as heavy employment in the 'Services' sector as Godthåb. It is for this reason that they have experienced downward shifts.

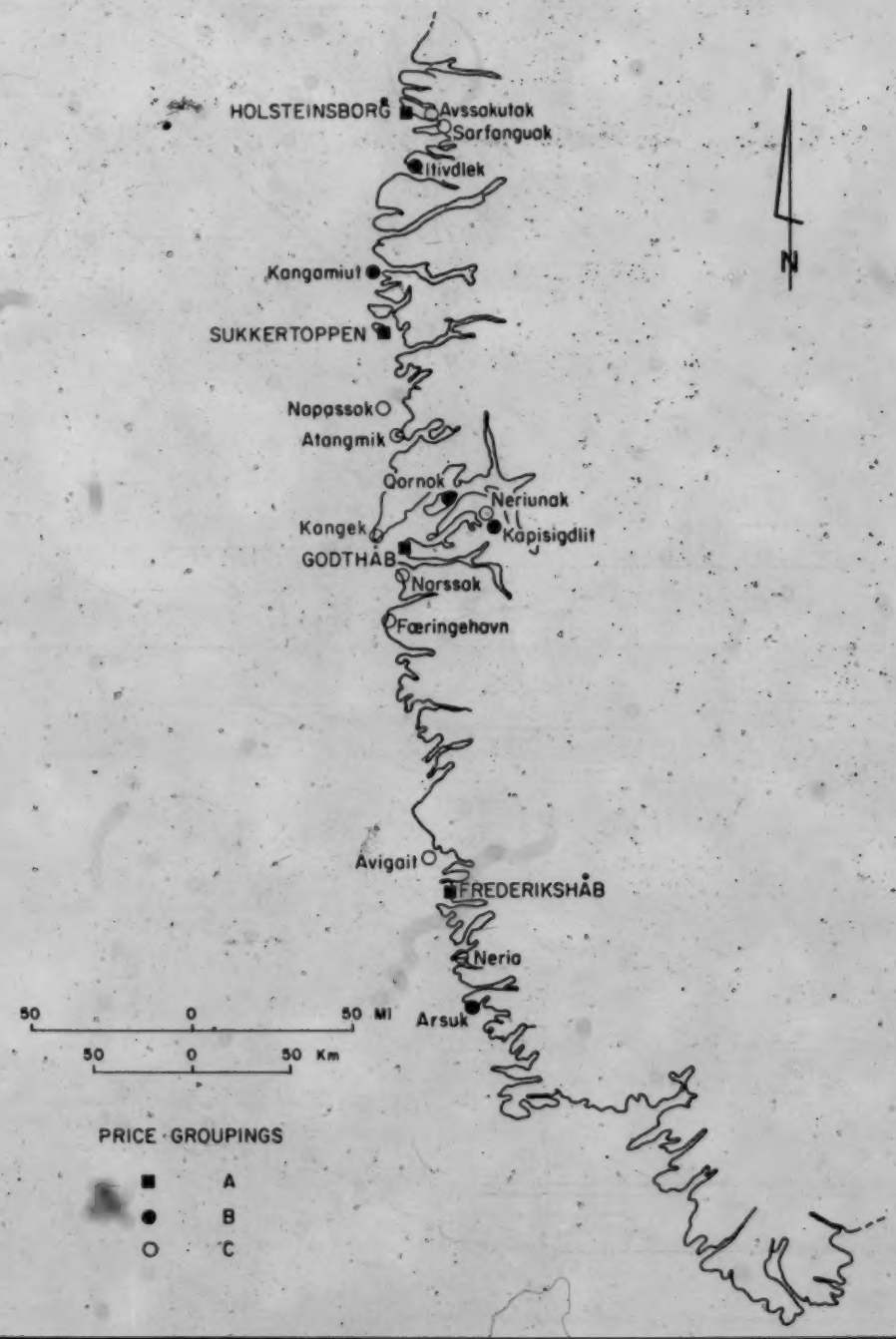
RATIONALIZING THE SPACE-ECONOMY

In Chapter IV, KGH's method for achieving greater economies in the *indhandling* system were outlined. It should be noted that in addition to the above described system of spatial discrimination, seasonal price differences were also established. The new system of geographically discriminated *indhandling* prices applied only to codfish. In the Greenland situation however, this was the most important item. Other products such as prawns and salmon are more valuable by the pound, but it is codfish which functions as the major industrial product because of tonnages involved and the related processing.

In FIGURE 25 the three price groupings are shown. Price group "A" includ the four major towns; price group "B" consisted of Arsuk in Frederikshåb commune, Kapisigdlit and Qornok in Godthåb commune, Kangamiut in Sukkertoppen commune, and Itivdlek in Holsteinsborg commune; price group "C" included all other places. The "B" group included only *bygder*, or villages, while the "C" group comprised places other than *bygder*. Places in the "C" group were as follows: Avigait and Neria in Frederikshåb commune; Neruniak, Kangek, Narssak, Færingehavn in Godthåb commune; Napassok and Atangmik in Sukkertoppen commune, and Sarfanguak and Avssakutak in Holsteinsborg commune.

Fig. 25

PRICE GROUPINGS FOR INHANDLING THE 'OPEN-WATER' REGION



Effects on the Spatial Structure of the Indhandling *System*

Analyses of these various types of centres over a period of years concentrate on a relationship between *indhandling* and *udhandling*. This relationship would offer a ratio of purchasing power (*udhandling*) to the value of fish landed (income or *indhandling*).

The data necessary to explore this relationship have been extrapolated from publications of Grønlandsrådet. A record of *indhandling* and *udhandling* for a selected period of years was analyzed by means of linear regression and testing for significance at the .05 confidence level using students *t*-test (Cole and King, 1968, pp. 118-120, 124-126). An underlying assumption is that *udhandling* is a function of *indhandling*. In other words, the ability to purchase consumer goods is related to the raw material (fish) that are traded-in by fishermen.

Data for "B" and "C" centres, as described above, cover the period 1958-1969. This time series does not include the formal ten-year plan of G-60, but can be considered representative in that industrialization of the 'Open-Water' region began in 1959. Data for towns during a similar period of time were not available. It was, however, possible to obtain data for the 1963-1972 period. It is, therefore, somewhat difficult to compare performances of "B" and "C" centres with that of the "towns." However, some overlap of these time series does occur and therefore the general trends are considered as being valid for the purposes of this study. Data for these centres are presented in Appendix VIII. FIGURES 26, 27, and 28 present the data arrays for "C", "B", and "towns" centres, respectively. Correlations are as follows: "C" centres,

Fig. 26

UDHANDLING and INDHANDLING IN "C" CENTRES 1958 - 1969

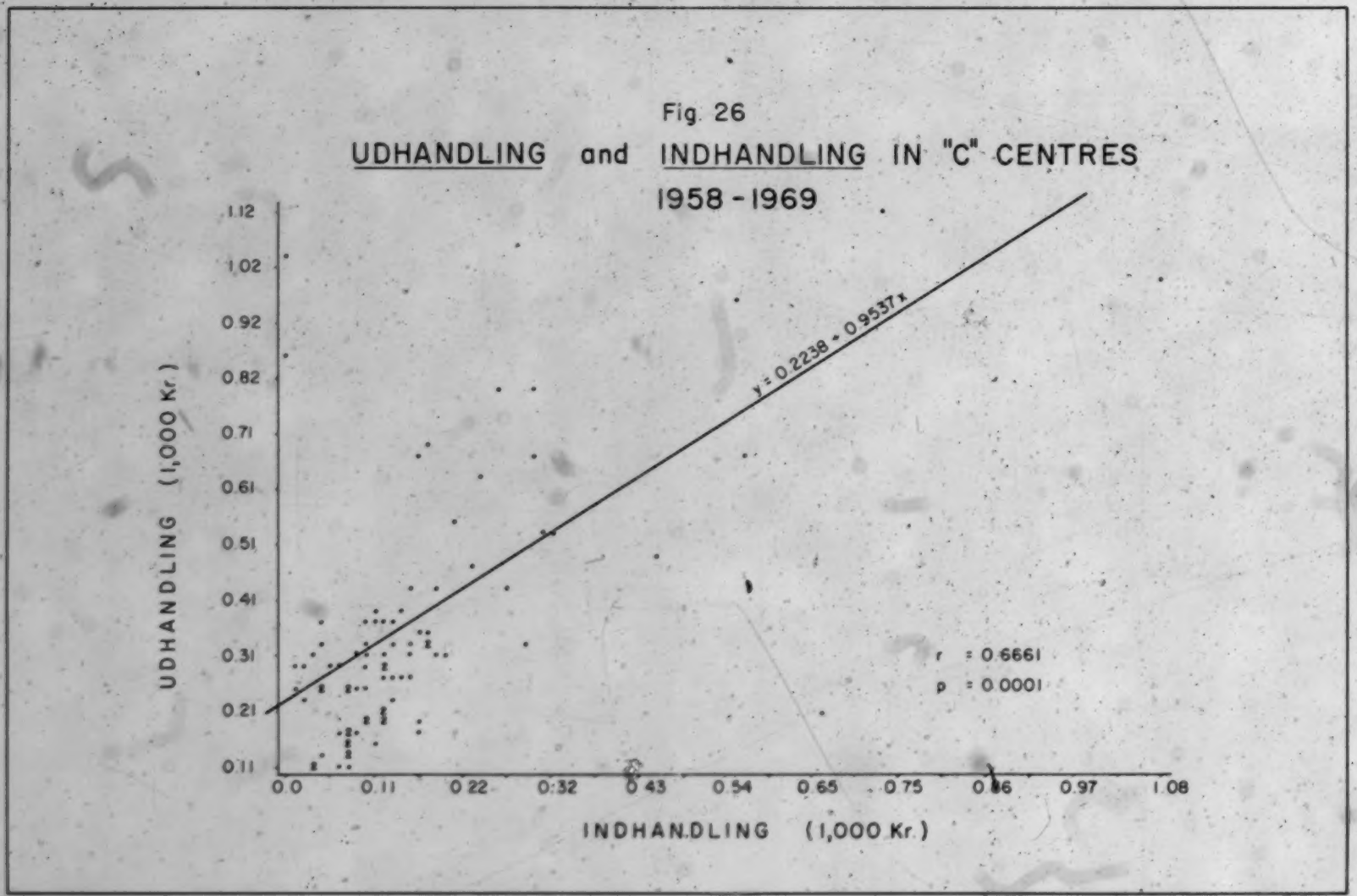


Fig. 27

UDHANDLING and INDHANDLING IN "B" CENTRES
1958 - 1969

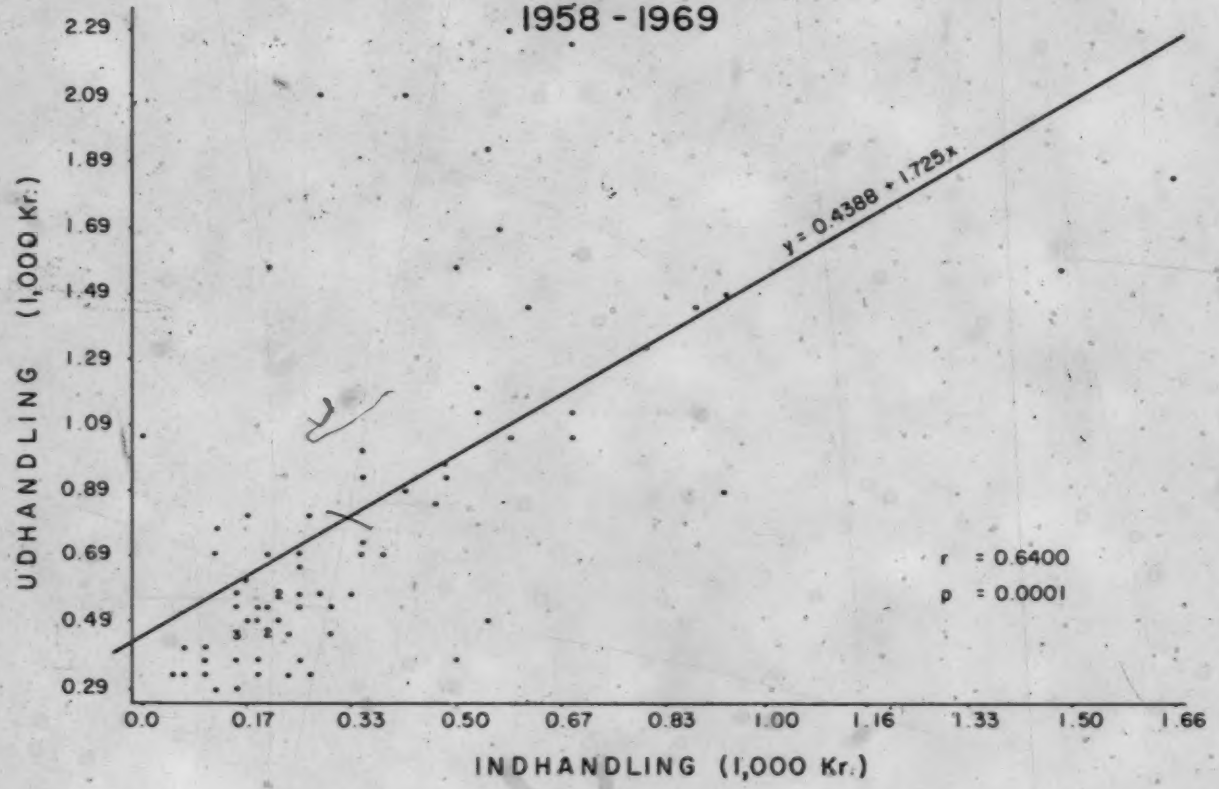
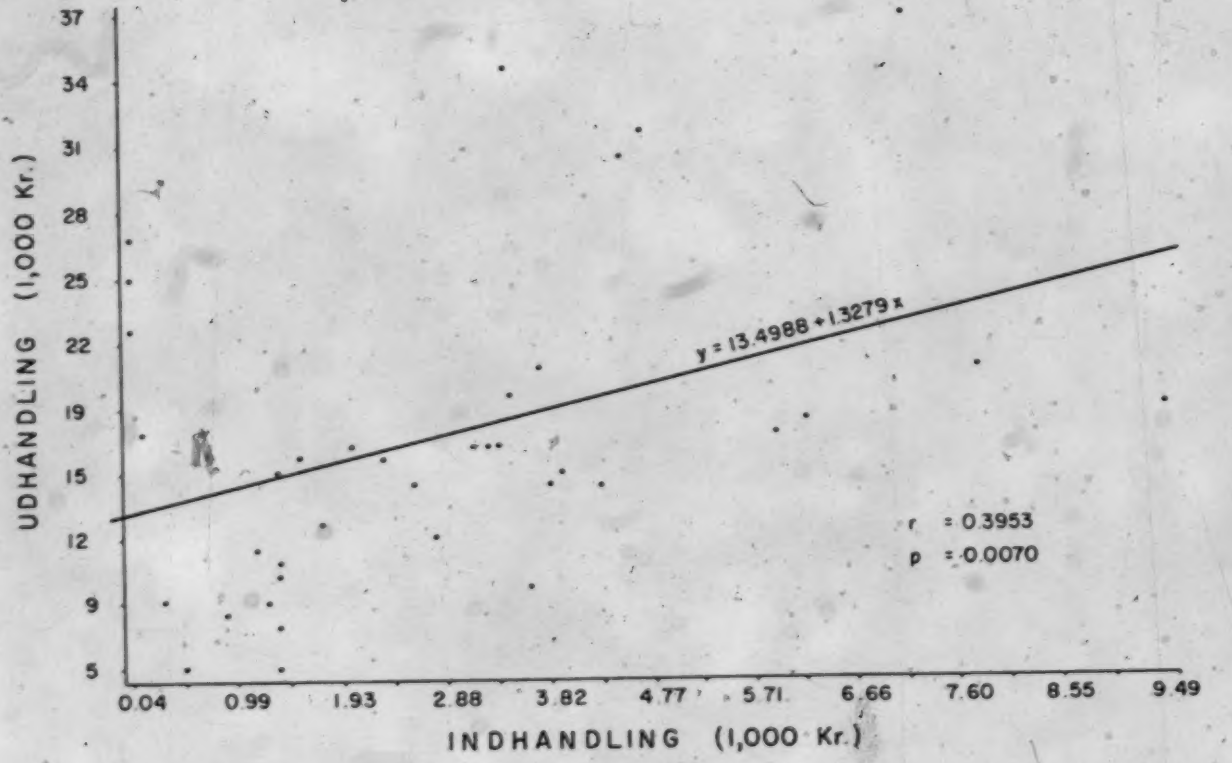


Fig. 28

UDHANDLING and INDHANDLING in "TOWNS"
1963-1972



.6660 (p = 0001); "B" centres, .6400 (p = 0001); "towns," .3953 (p = 0070).

It would appear then that in "C" centres, and to a lesser extent in "B" centres, consumption (*udhandling*) was more directly a function of the basic industry, i.e. fishing. By contrast, in towns *indhandling* has not had the same effect. A higher rate of expenditures on consumer goods in towns can only be explained by the presence of processing plants. Here there are many wage earning workers and, in addition, other retail and service employees spread throughout other employment sectors. "B" and "C" centres do not usually have large retail and service sectors in their employment structures. Income over and above fishing is usually explained by some type of transfer payment.

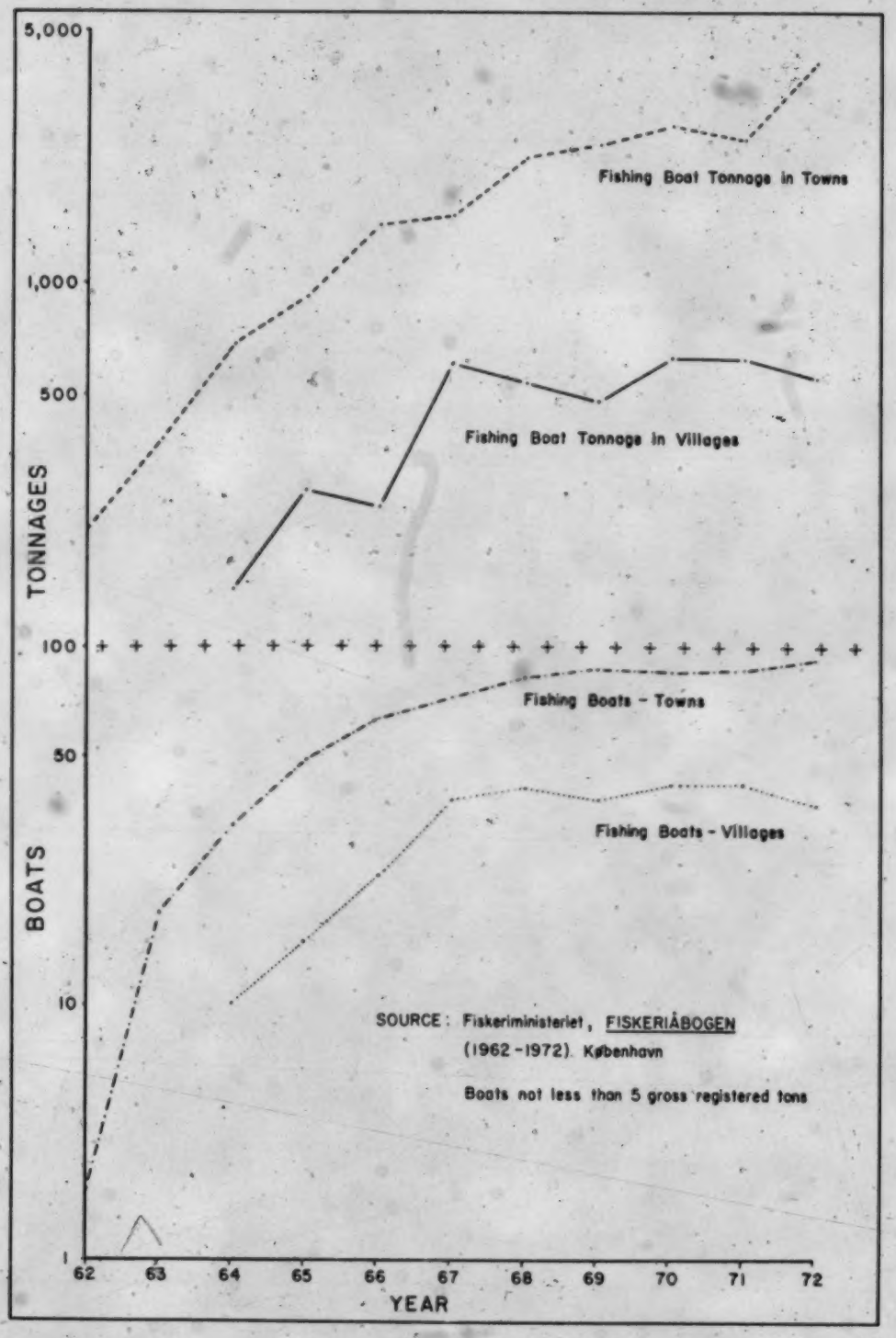
Relocation of Fishermen

An immediate effect of KGH's industrialization effort was a gradual relocation of the fishing industry. One of the clearest indications of this trend can be seen through an examination of fishing boat locations and the tonnages involved. In FIGURE 29, the numbers of fishing boats and total tonnages are compared over an 11-year period. Growth in numbers of boats in 'Open-Water' towns leveled off after 1967. In villages there are indications that declines are now being experienced. The combined gross registered tonnage for towns and villages has tended toward greater divergence since 1967. The reason for this is KGH's implementation of an ocean-going trawler program.* Although data are not

*Ocean-going trawlers are large ships capable of staying out on fishing grounds for extended periods of time. The type used in Greenland is the "stern" type, whereby trawl nets are hauled up through a specially

Fig.29

STRUCTURAL CHANGES IN THE 'OPEN WATER' REGION
1962-1972 (Numbers of Fishing Boats & Tonnages)



available beyond 1972, the trawler program scheduled two such trawlers for three of the 'Open-Water' towns (Godthåb, Sukkertoppen, and Frederikshåb) and one trawler for the other town (Holsteinsborg). Since the first trawler entered service in May 1969, others have subsequently followed in April and August of 1971, July 1972, and May, June and October of 1973 (Ministeriet For Grønland, 1974b, p. 6). The trawlers then were all delivered on time.

It would appear reasonable to expect that since 1972, the "tonnage gap" between towns and villages has widened. On the other hand, a shift to larger vessels will likely reduce growth of smaller craft in town in the future.

In order to probe more accurately the relocation phenomenon as it affected these various centres, growth in numbers of fishermen was investigated as a function of population growth in the three types of centres. (FIGURE 26 implies a greater increase in the numbers of fishermen in towns than in villages.)

In FIGURES 30, 31, and 32 the numbers of fishermen in these three types of centres are regressed on population growth. The correlations are as follows: towns, .7996 ($p = .0006$); "B" centres, .2023 ($p = .2181$); "C" centres, .8274 ($p = .0002$). The correlations for "towns" and "C" centres are high, whereas "B" centres have shown very little significant

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constructed gangway in the stern section. The first of these types was placed into operation in May 1969. Although this one was 500 gross registered tons, the other six have been slightly larger, weighing 750 gross registered tons. The crew complement is about 25.

Fig. 30

FISHERMEN and POPULATION IN "B" CENTRES
1953 - 1970

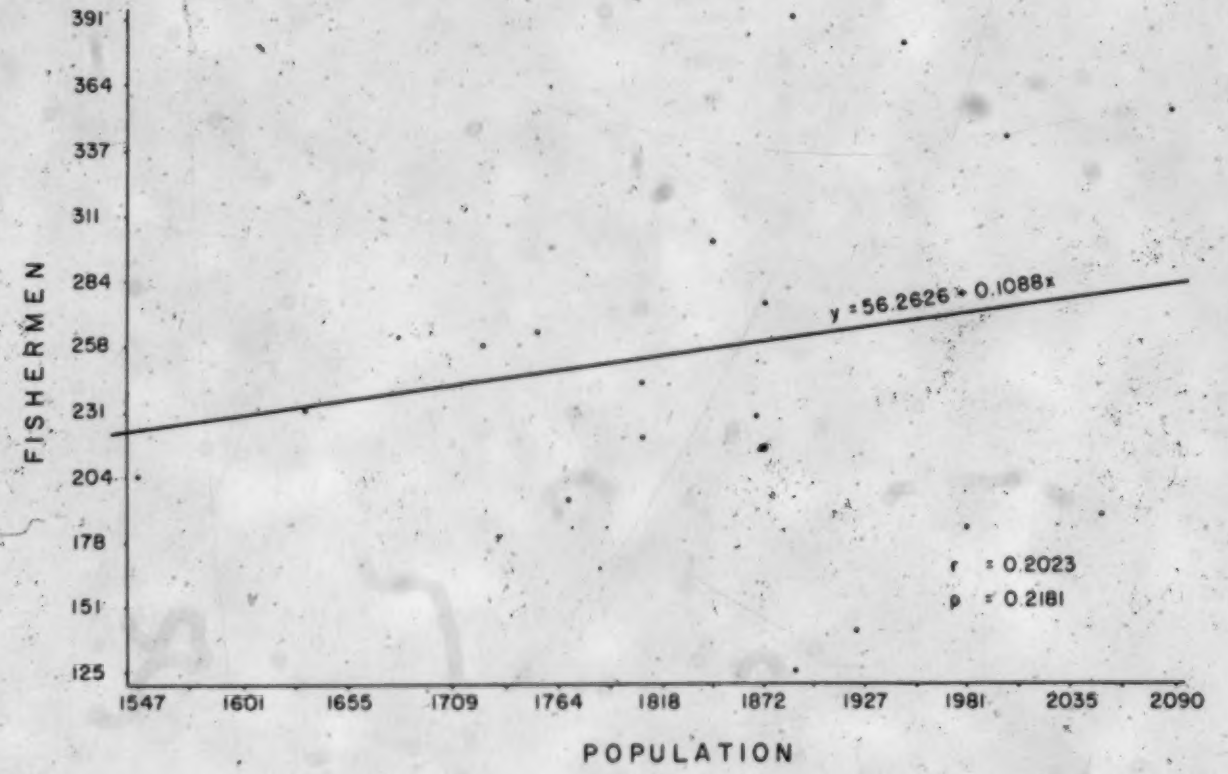


Fig. 31

FISHERMEN and POPULATION in "C" CENTRES
1953 - 1970

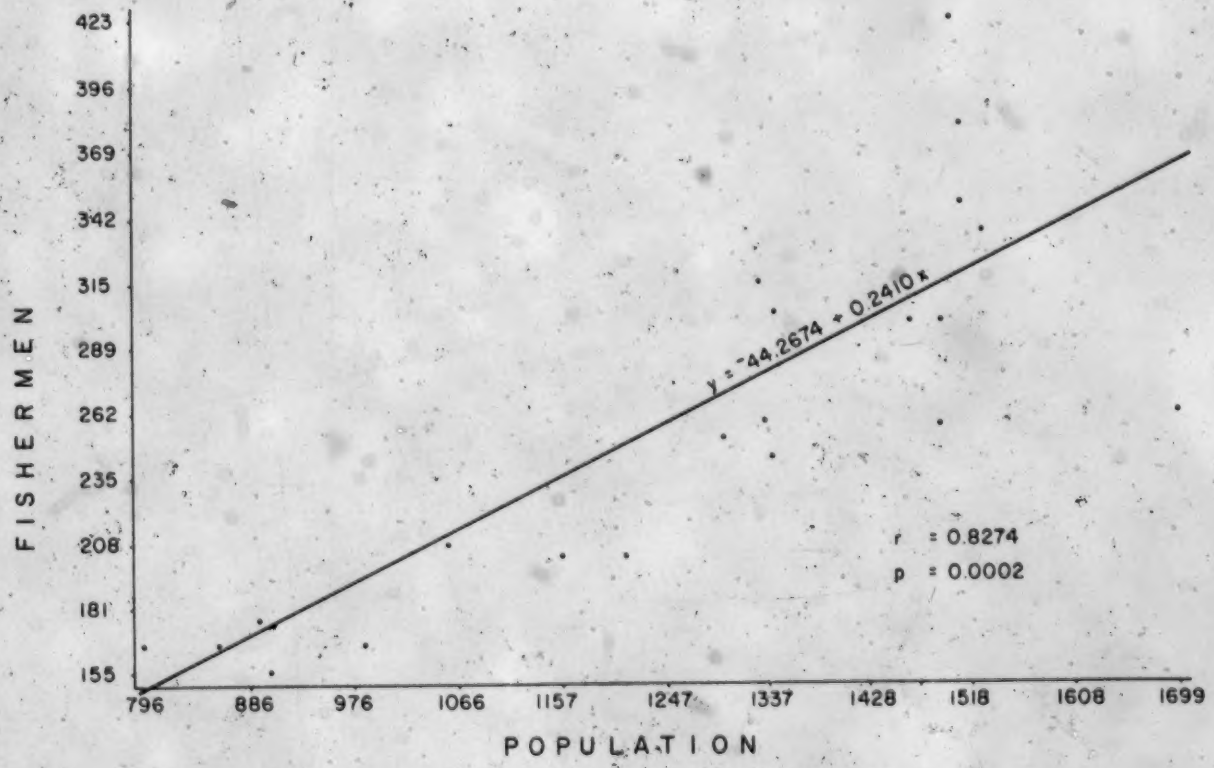
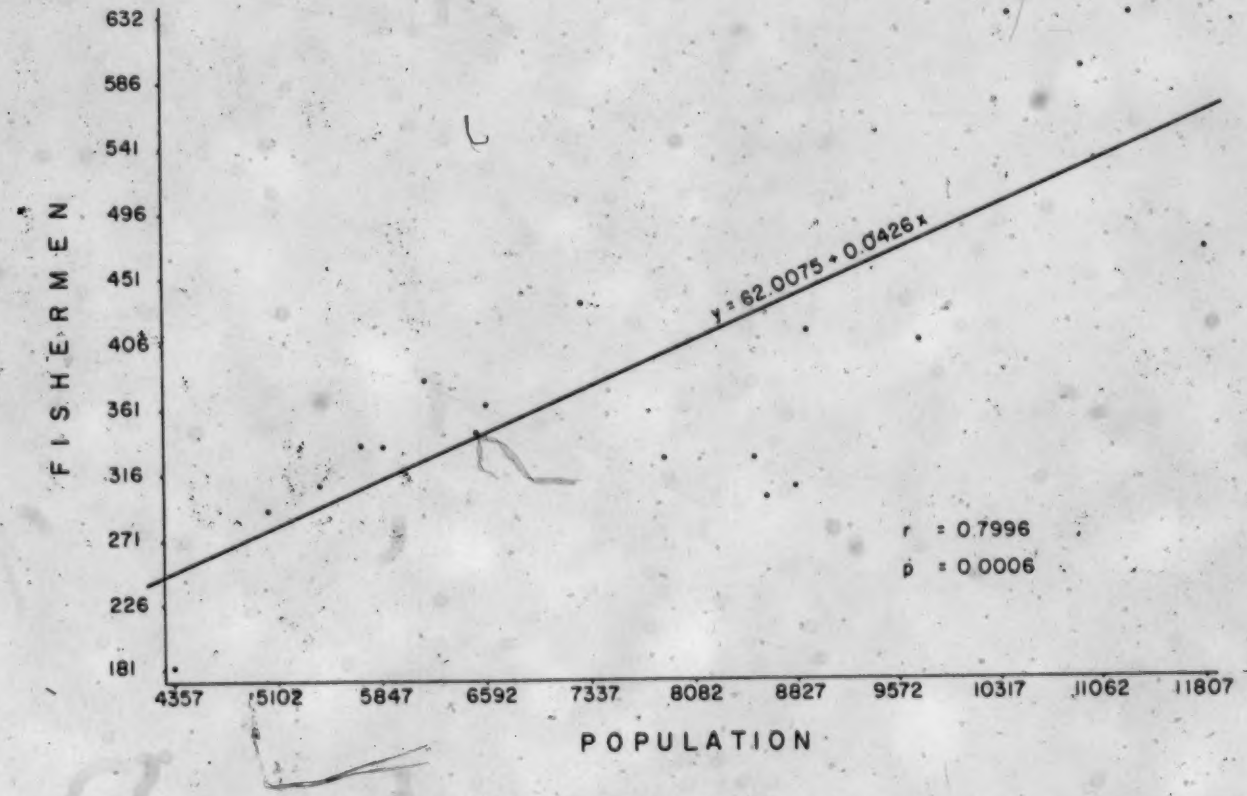


Fig. 32

FISHERMEN and POPULATION in "TOWNS"

1953 - 1970



correlation. The reason for the "B" centres' poor performances is not entirely understood. It could be a result of population increases that are due to either migration of workers from "C" centres or the possibility that some fishermen who resided in "B" centres were *indhandling* in towns where highest prices prevailed. They may have, in these cases, registered their boats in the towns and delivered catches to towns, moving in to reside only when a residence was made available.

ECONOMIC DEVELOPMENT—INFRASTRUCTURE AND HOUSING

The Danish government's decision to embark on an industrialization program can be appreciated by the fact that in 1950 the amount of capital-producing goods was very insignificant. From 1951 to 1972, a total of 807,900,000 million kroner were invested in 'Open-Water' towns. (This figure does not include substantial amounts made available for housing assistance to in-migrants.)

Investments in Infrastructure

TABLE 22 is a record for the period 1951-1972 of all investments in the 'Open-Water' towns. The investments are divided into three types —Direct Productive Activity (DPA), Economic Overhead Capital (EOC), and Social Overhead Capital (SOC) (Hansen, 1968, p. 150). Included in the first group are factories, fishing boats, and those types of facilities that are directly involved in production of goods. Economic overhead includes such infrastructural features as harbours, electrical power generators, warehouses, etc. which support productive installations.

TABLE 22

Investments in the 'Open-Water' Towns, 1951-1972
(1,000 kr.)

	DPA	EOC	SOC	TOTAL
Frederikshåb	19.847 (29.00%)	81.824 (16.75%)	29.79 (11.87%)	131.420 (16.27)
Godthåb	16.142 (23.62%)	214.724 (43.96%)	156.327 (62.25%)	387.193 (47.93)
Sukkertoppen	23.813 (34.84%)	103.495 (21.19%)	29.548 (11.77%)	156.856 (19.41)
Holsteinsborg	8.540 (12.50%)	88.404 (18.10%)	35.437 (14.12%)	132.381 (16.39)
TOTAL:	68.342 (8.46%)	488.450 (60.46%)	251.111 (31.08%)	807.900

DPA — Directly Productive Activities
EOC — Economic Overhead Capital
SOC — Social Overhead Capital

Source: Ministeriet For Grønland. "Regnskabsanalyser" (1951-1972). (Økonomisk/ Statistisk Kontor.) København.

Social Overhead takes into account provision for schools, libraries, health and welfare services, fire and police protection, etc. These installations are regarded as being very important in that they enhance the social environment and thereby help to attract both entrepreneur and worker alike.

In Appendix IX a more detailed listing of all the facilities in each category has been provided. Appendix X records the type of investment in each of the four towns. Disagreement may arise concerning the categorizing of various investment sectors. However, the logic behind each grouping has been the extent to which that facility or installation supports the production as opposed to the social environment. Thus, while postal services and internal air transportation, for example, may possibly be included under "Social Overhead," the situation in Greenland dictates that these features are more important in the primary and secondary production efforts.

Of the total amount of money invested, only 8.50 per cent was utilized for Directly Productive Activities. Economic Overhead Capital required more than half the total and Social Overhead claims were less than one-third the total amount. Godthåb accounted for almost 50 per cent of the aggregate investment in 'Open-Water' towns. The other three towns required 16 per cent, 19 per cent, and 16 per cent. Godthåb also had larger sums invested in EOC and SOC. Sukkertoppen, on the other hand, had more capital invested in DPA than in the other three towns. In relation to investments in EOC and SOC, DPA investment in Godthåb was very little. This may result from the fact that since 1963, private

investment in DPA has been substantial thus negating the need for government investment. Heavier investment in SOC and EOC in Godthåb further reflects the numerous administrative/service activities associated with the government seat in Greenland.

The mix of these three types of public investment—DPA, EOC, and SOC—has been investigated by Hansen in the study noted above. He argues that the greatest need in underdeveloped areas is for SOC. His views have been succinctly summarized by Dicken and Lloyd:

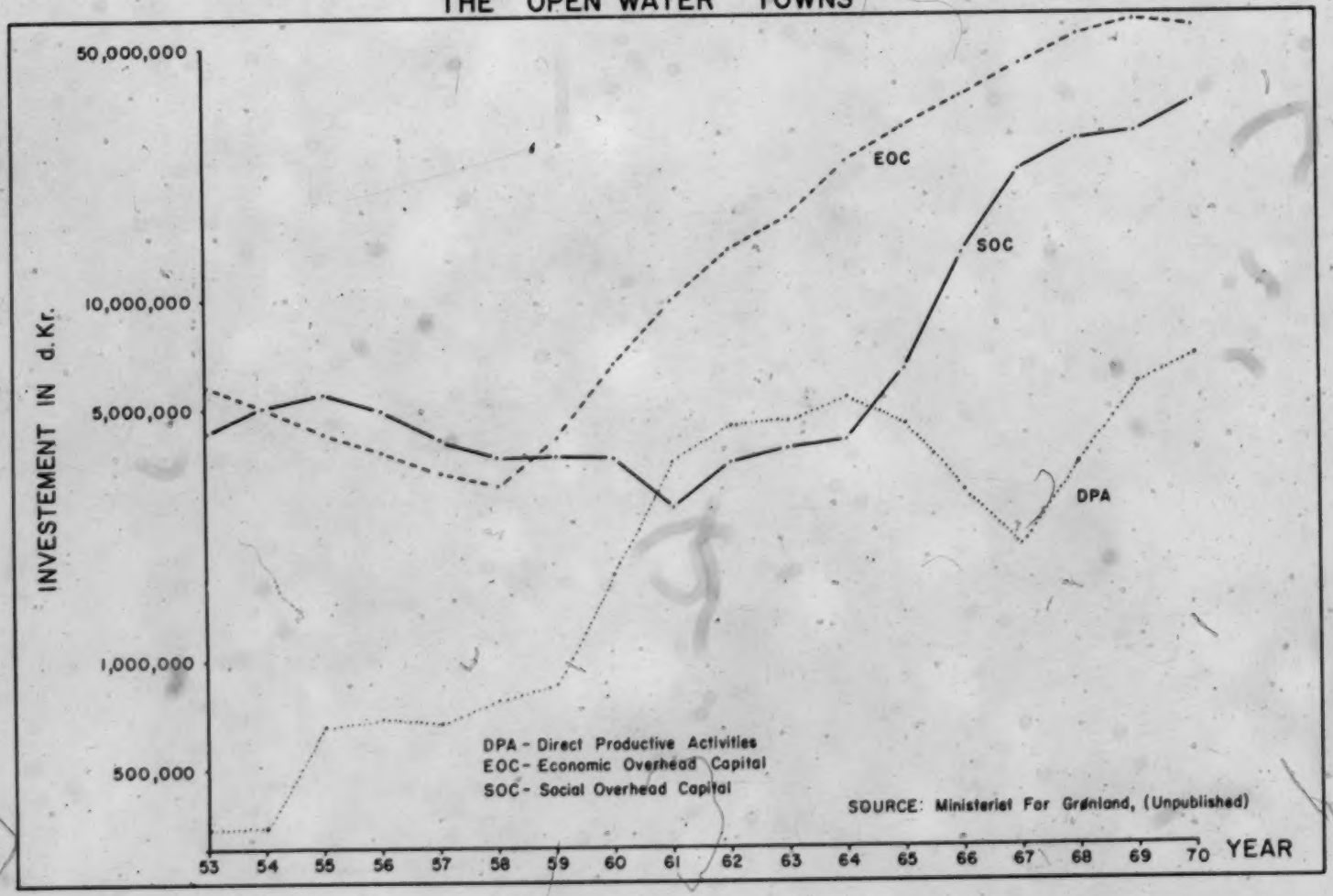
> . . . particularly investment in educational facilities with the aim of both raising the general and specific level of skills and encouraging a more progressive attitude towards change and innovation. This argument does not imply either that SOC alone is needed in underdeveloped regions or that it is not required in developed but stagnating regions. But it does suggest that the emphasis on the two types of investment [EOC and SOC] should be varied according to the type of problem region (Dicken and Lloyd, 1972, p. 263).

It is difficult to find documentation for this point of view in published material on Greenland. It is possible, however, to record public investments for a 20-year period, detailing DPA, EOC, and SOC investments. In FIGURE 33 a five-year moving average of these types of investment is described. From 1951-1961, SOC investment stagnated. EOC began to increase in 1958 to meet demands for support as a result of DPA investments.

The trends are perceived as reflecting development plans as set forth in the Greenland Commission Report of 1950. G-60, published in 1964, discussed proposed changes which had, in fact, already been implemented as early as 1959. With emphasis on development of the 'Open-Water' towns, SOC investment begins to increase at a more rapid

Fig. 33

FIVE YEAR MOVING AVERAGE OF INVESTMENTS IN ECONOMIC ACTIVITIES, 1951-1972
THE 'OPEN WATER' TOWNS



rate. This is consistent with the views as described by Lloyd and Dicken. A similar trend can be observed when the four towns are considered individually and based on five-year moving averages (see FIGURE 34).

Five-year moving averages were also calculated for EOC and DPA. In the case of DPA, growth is sporadic. This is due to the fact that investment in productive installations is less than in the more numerous and varied forms that EOC support features represent. The EOC and DPA five-year moving averages are presented in Appendixes XI and XII, respectively.

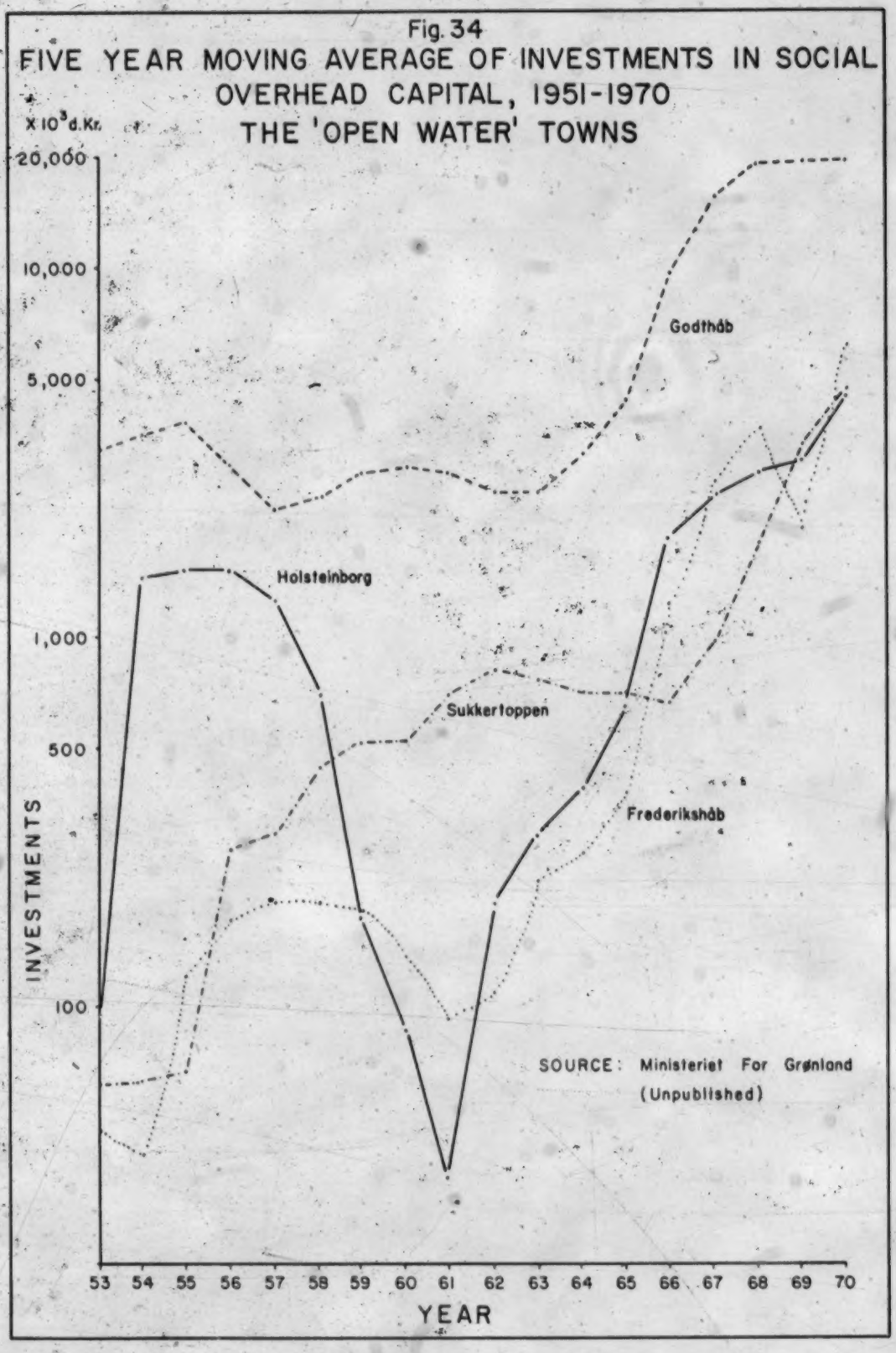
Housing and Migration

The effect of economic investment in concentrating population in towns was further analyzed by means of linear regression which considered investment in housing as a function of net in-migration. The figures of net in-migration were calculated from the census manuscripts for Greenland.

Included in these sources indicating investment by categories were values for yearly expenditures on *Boligstøtte*, or housing assistance. It should be recalled that one method for attracting a labour force in the towns, was provision of suitable housing with generous financing terms. The *Boligstøtte* figures were not included in SOC data so that a separate statistical procedure could be applied. Since *Boligstøtte* figures were not available before 1959, only net in-migration for that 14-year period from 1959-1972 was drawn from census manuscripts at the Økonomisk-Statistik Kontor, Ministeriet For Grønland.

Fig. 34

FIVE YEAR MOVING AVERAGE OF INVESTMENTS IN SOCIAL OVERHEAD CAPITAL, 1951-1970
THE 'OPEN WATER' TOWNS



The correlations had fairly high levels of predictability. For each of the four towns, these correlations, significant at the .05 confidence level (*t*-test), were as follows: Frederikshåb, .9012 ($p = .0001$); Godthåb, .443. ($p = .0563$); Sukkertoppen, .5116 ($p = .0308$); and Holsteinsborg, .3457 ($p = .1130$) (see FIGURES 35, 36, 37, and 38). In the case of Godthåb, a lower correlation prevails because much of the housing construction has been designated as "government housing" and has, therefore, been funded under a different financial authority. The low correlation for Holsteinsborg is not immediately explained. However, it should be remembered that population growth within towns is also explained by high birthrates during the 1950s and 1960s. Also, figures taken from census manuscripts do not include in-migrations from villages and settlements *within* a commune.

Notwithstanding these deficiencies in the underlying assumptions regarding these data, correlations are strongly suggestive that housing availability and migrations are related. People have been more inclined to migrate to 'Open-Water' towns when acceptable housing is available.

SOCIAL DISECONOMIES

Those decisions by the Danish government to centralize the labour force as the economic base evolved more towards commercial fishing and less in the direction of sealing, were rational. Further rationalizations were forced by the necessity to add more value to fish through processing and by the extremely competitive nature of the world market for fish products. Ocean-going, deep-sea trawlers meant increased catches which

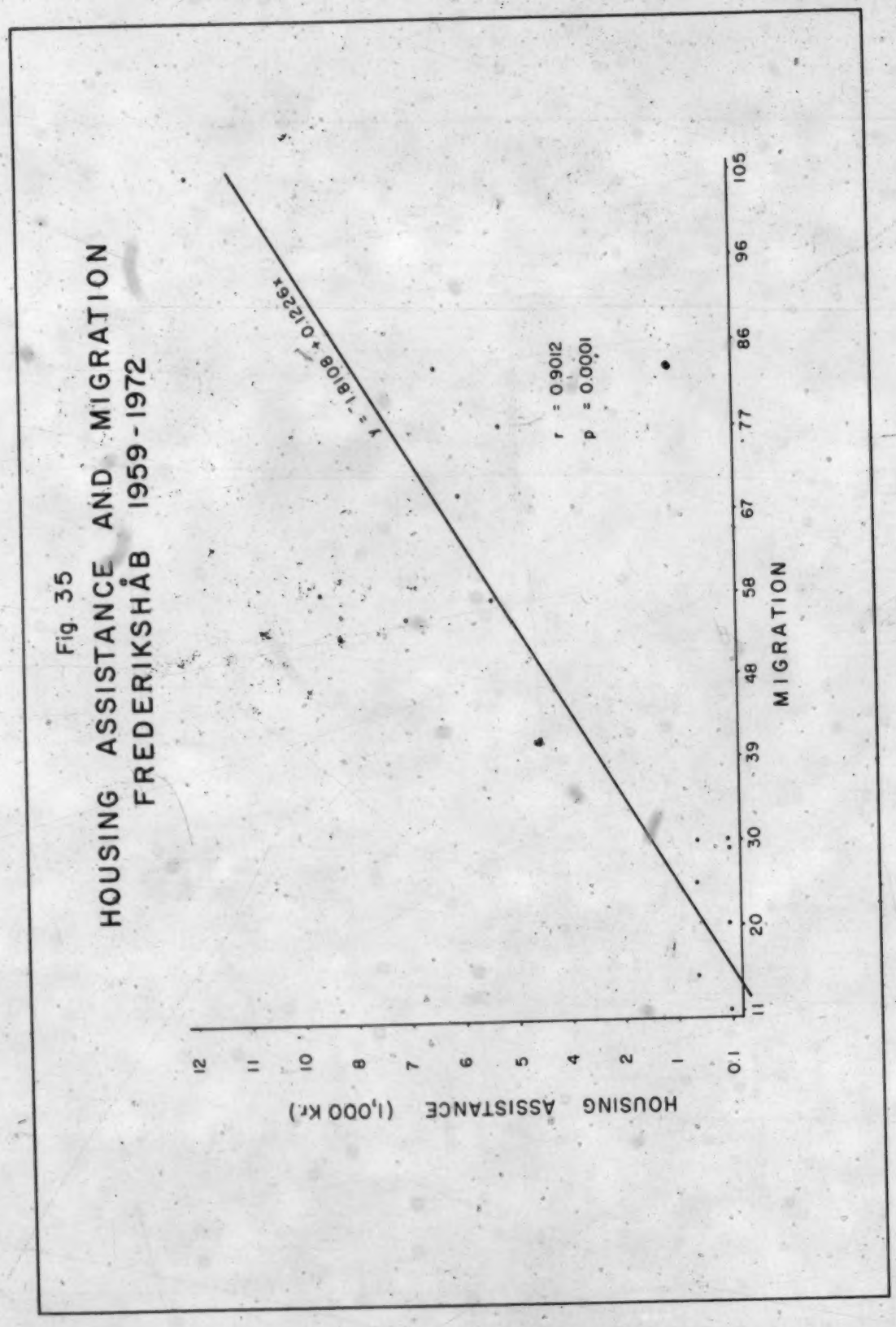


Fig. 35
HOUSING ASSISTANCE AND MIGRATION
FREDERIKSHÅB 1959-1972
HOUSING ASSISTANCE (1,000 kr.)
MIGRATION
r = 0.9012
p = 0.0001
y = -1.8108 + 0.1226x
0.1
1
2
4
5
6
7
8
10
11
12
11
20
30
39
48
58
67
77
86
96
105

Fig. 36

HOUSING ASSISTANCE AND MIGRATION GODTHÅB 1959-1972

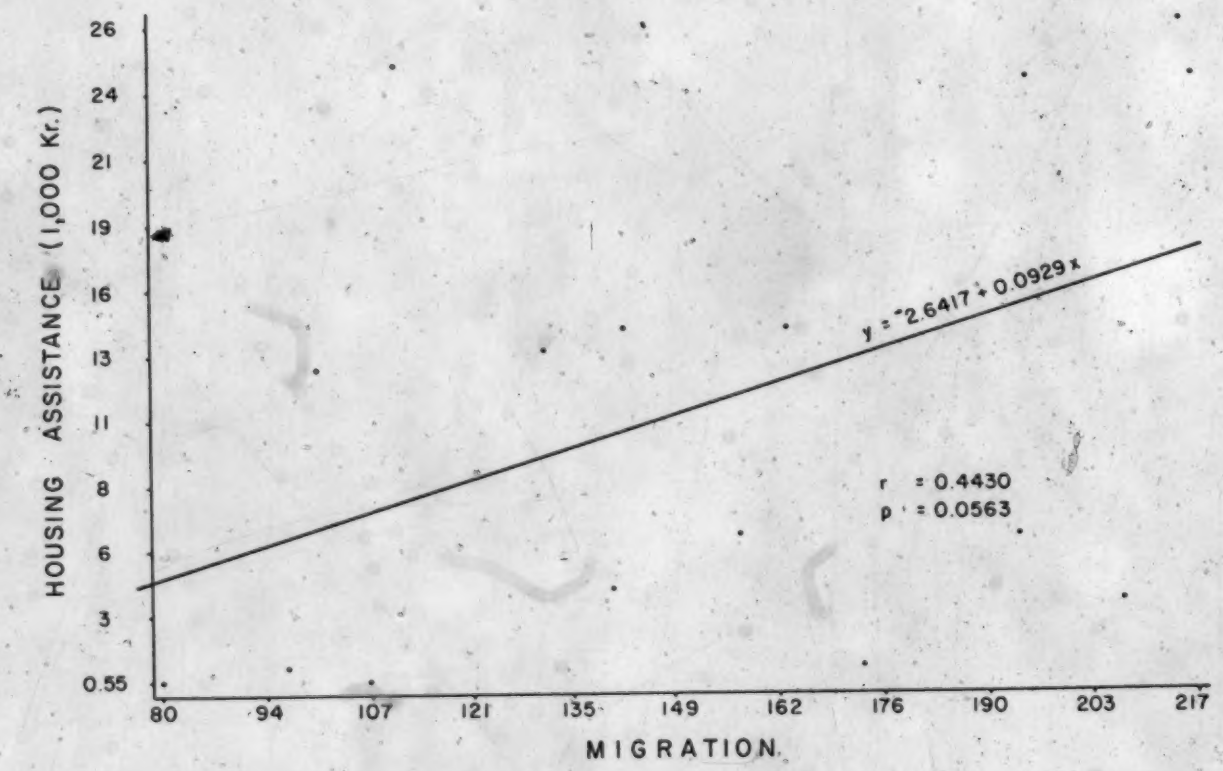


Fig. 37

HOUSING ASSISTANCE AND MIGRATION
SUKKERTOPPEN 1959 - 1972

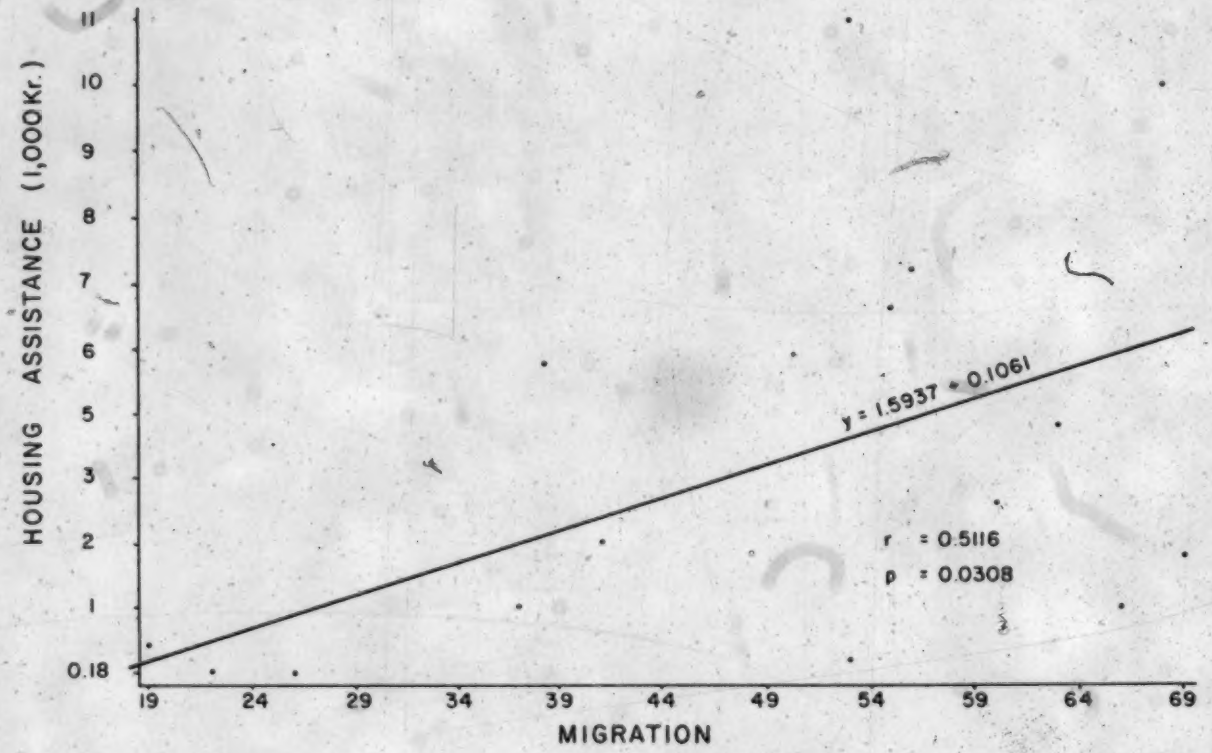
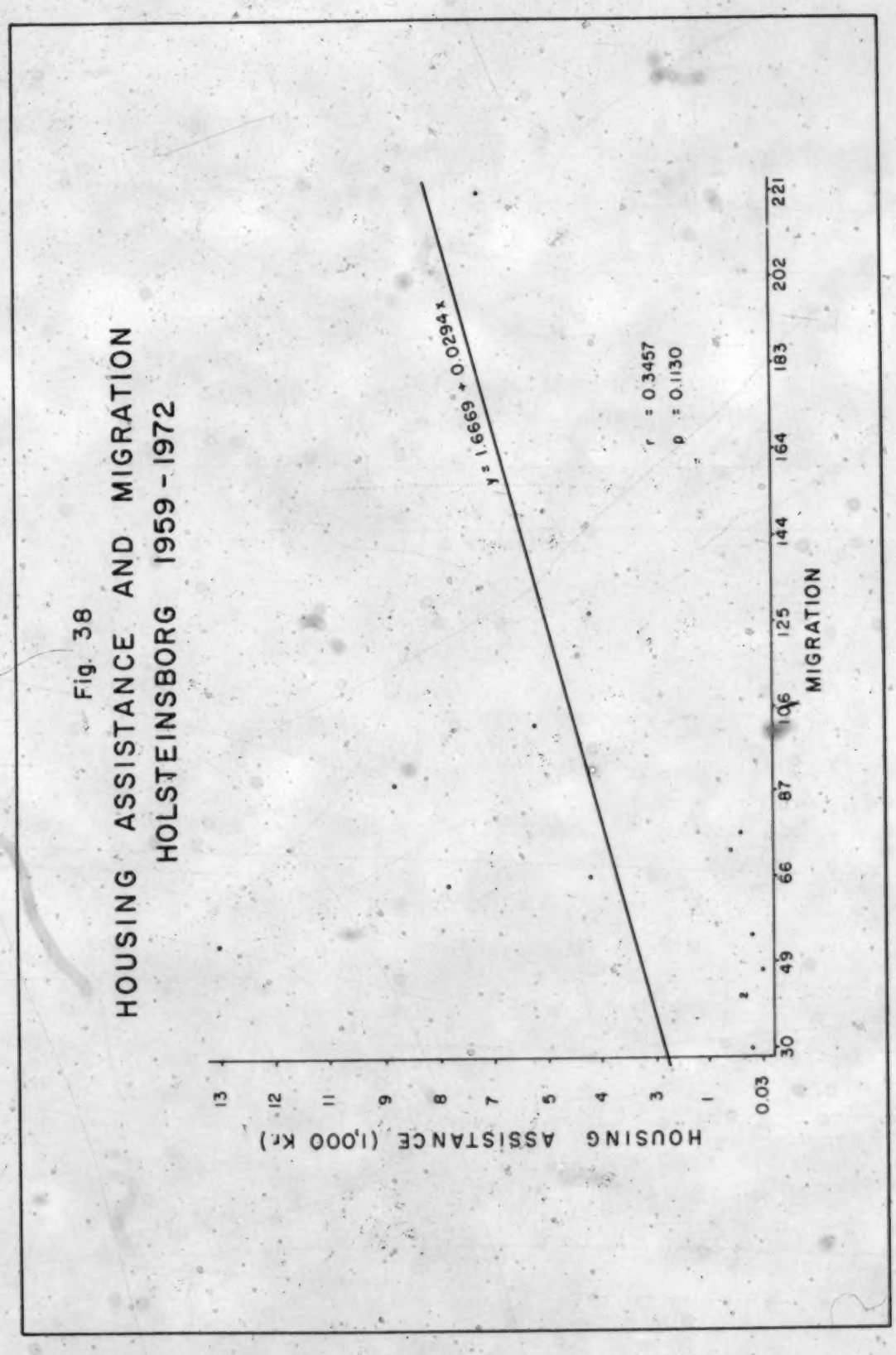


Fig. 38

HOUSING ASSISTANCE AND MIGRATION
HOLSTEINSBORG 1959 - 1972



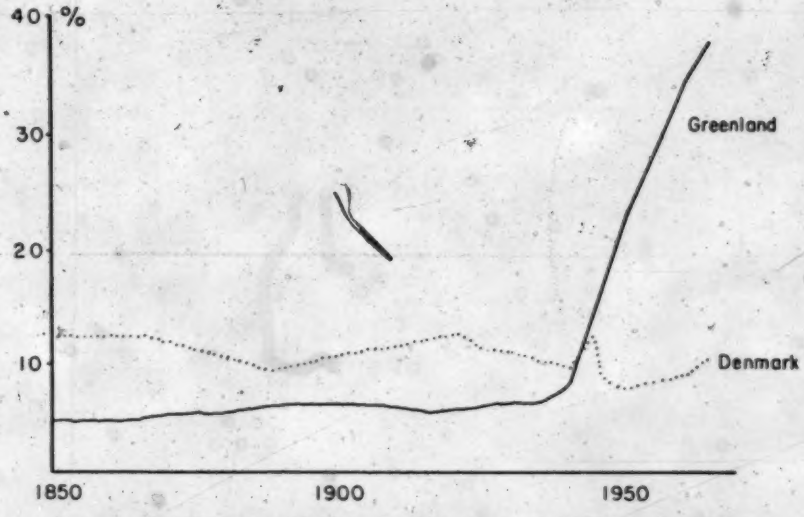
dictated larger concentrations of workers. This in turn led to extensive construction of multiple-dwelling units at points of production, i.e. towns. The *indhandling* policy, as described, was a tacit recognition of the need to compete effectively on world markets.

There is little need to document the fact that many Greenlanders lived in a relatively primitive society in 1950. This certainly was the case in the northern and eastern Hunting Districts—although perhaps to a somewhat lesser extent in Southern Greenland. The policy of maintaining dispersed settlement before 1950, the "closed shore," and 'pay-as-you-go' policies, are ample evidence which reflect a primitive Greenlandic society. The resulting "culture contact" has had unfortunate aspects—especially in the towns—and some of these can be noted briefly in this section.

In 1945 there were 473 Danes out of a total population of 21,412. By 1972 the Danish element in Greenland had increased to 8,492 out of a total population of 48,581. The Danish proportion then, has increased from 2.20 per cent to 17 per cent over the intervening 27 years. These statistics underlie the invasion of Greenland by an "army" of industrial workers. There have been many problems caused by this Danish influx. In FIGURE 39 the incidence of extramarital births in Greenland and Denmark are compared. The figure clearly demonstrates one unfortunate aspect of Greenland being opened to world trade. (In FIGURE 39 the Greenlandic line begins its upward climb with the beginning of American presence in Greenland during World War II. The line has continued upward since 1960.)

Fig. 39

EXTRAMARITAL BIRTHS IN GREENLAND & DENMARK



Extramarital births in per cent of all births in Greenland and in Denmark from 1850 to 1965.

SOURCE: Olsen, G Aa, "Sexual Norms Under the Influence of Altered Cultural Patterns in Greenland", Acta Psychiatrica Scandinavica, Vol. 42, Fasc. 2 (1973), pp. 148-158.

The question of culture contact has been examined by Wirth (1964, pp. 229-243). He notes seven situations in which culture conflict may eventuate in delinquency. Three of these are pertinent to Greenlandic society and result from the concentration/urbanization processes. The three types of situations, according to Wirth, are as follows:

1. Where the individual belongs to a group in which certain forms of conduct have a different meaning and where there is a difference of emphasis in values from that in dominant society.

2. Where social life is very mobile and where culture is in a state of flux, such as in those areas of cities where there is no organized family or community life and where the social framework, which ordinarily supports the individual in his conduct disintegrates or fails to function.

3. Where an individual belongs to a group in which he finds himself dissatisfied and stigmatized, but from which he cannot readily escape into the group that he considers superior.

It is not the intention in this section to document the fact that these situations prevailed in Greenland. There is evidence that much of the "culture contact" has been unfortunate for Greenlanders. Two surrogates have been identified which can be used to illustrate this unfortunate situation. In TABLE 23 data reveal the number of reported cases of venereal disease and mental illness. (Mental illness is reported in two separate categories, psychotic and neurotic. To facilitate analysis, the two groups are combined into one.)

In 1864 gonorrhea was observed in Greenland for the first time. Not until 1913, was it reported as being endemic. Many of these early incidences were reported from Ivigtut, where relatively large numbers of

TABLE 23

Venereal Disease and Mental Illness in the 'Open-Water' Region

1957-1970

Year	Number of cases reported in Greenland		Frederikshåb		Godthåb		Sukkertoppen		Holsteinsborg		Number of cases reported in 'Open-Water' Region	
	V.D.	Mental illness	V.D.	Mental illness	V.D.	Mental illness	V.D.	Mental illness	V.D.	Mental illness	V.D.	Mental illness
	(Rates per Thousand Population)											
1957	67	5	102	*	75	*	59	*	112	*	83	*
1958	90	5	90	*	76	*	47	*	96	*	75	*
1959	74	7	123	*	66	*	23	*	76	*	67	*
1960	88	3	108	6	69	4	25	5	74	5	66	5
1961	81	4	79	13	44	3	42	2	128	4	66	5
1962	110	4	120	4	69	7	56	3	166	6	102	5
1963	94	4	160	5	75	4	56	2	91	7	87	5
1964	94	4	90	5	86	4	89	4	88	6	88	5
1965	76	4	64	6	129	3	88	3	77	7	99	4
1966	108	3	130	9	186	3	65	4	82	4	128	4
1967	103	*	140	*	187	*	50	*	86	*	128	*
1968	135	4	149	7	227	5	110	4	94	1	162	4
1969	152	4	270	10	303	5	102	4	128	4	218	5
1970	183	4	257	11	310	6	106	5	134	2	223	6

* Data unavailable

Source: — *Beretninger vedr. Grønland,* "Sundhedstilstanden i Grønland."

— *Beretninger vedr. Grønland,* "Almindelig beretninger."

Danish cryolite miners were located (Olsen, 1973, p. 150). Reports from the Chief Medical Officer in Greenland during the 1950s continually pointed out the association of the disease with ships from Denmark and other coastal boats. The 1952 Report contained the following:

> The heavy frequency of reported cases is primarily a result of the population's sexual activity. Relative to the population size, there is a heavy degree of intercourse with the outside world through the coming and going of boats (author's translation). (*Beretninger vedrørende Grønland*, 1952, p. 22.)

Similarly, in the 1957 Report, the Chief Medical Officer wrote:

> In 1957 gonorrhea appeared for the first time in Scoresbysund district as a result of a Danish worker (author's translation). (*Beretninger vedrørende Grønland*, 1957, p. 34.)

And again, in 1963, he reported an observation regarding the general distribution of gonorrhea:

> Geographically, the fewest cases occur in northern West Greenland, Thule, and Scoresbysund, while the disease is very widespread in the remainder of Greenland and in particular certain towns (author's translation). (*Beretninger vedrørende Grønland*, 1963, p. 27.)

In TABLE 23 above, the total number of cases is given so that a comparison can be made with the 'Open-Water' region. The percentages for the 'Open-Water' region have varied from a low of 25 per cent in 1960 to a high of almost 57 per cent in 1969. It seems a major cause of the disease is the frequent visitation by boats and the increasing frequency of Danish labourers in towns. Of course, it is recognized that the disease is also transmitted *among* Greenlanders and that control is especially difficult in a *bygd* where there is no resident physician. Although reported cases do not distinguish between Danes and Greenlanders,

promiscuity is greater among Greenlanders and hence the likelihood of cases being more numerous among Greenlanders than Danes.

Notwithstanding some limitations and the fact that the disease is also transmitted by Greenlanders, the Danish population was compared with the number of reported cases of venereal disease for each of the four communes—Frederikshåb, Godthåb, Sukkertoppen, and Holsteinsborg—using the Spearman Rank Correlation technique (Yeates, 1968, pp. 15-22). The correlations obtained were as follows: Frederikshåb, .7231; Godthåb, .9517; Sukkertoppen, .8681; and Holsteinsborg, .7319. Despite limitations, it appears that venereal disease is related to the presence of Danes. Since most of the Danes are found in towns and it is the towns that are most often visited by ships, higher incidences of the disease are without doubt found in these places.

Mental illness is a phenomenon that has increased. In 1952, of all hospital patients, 1.31 per cent were being treated for mental disorders. Not until 1960 do the statistics begin to distinguish cases by commune. In that year, 1.61 per cent of all hospital patients were treated for mental illness. In 1970 the figure had increased to almost 3 per cent. For each year during the period 1960-1970, the 'Open-Water' region accounted for more than 40 per cent of all cases. In 1970 (the last year for which a datum is available), the share for the 'Open-Water' region was almost 53 per cent.

In discussion with numerous Danes, both in Denmark and Greenland, it was often stated that mental illness among Greenlanders could be attributed to a radically altered lifestyle in that they were forced to

adopt Western European habits. Reported cases of mental illness were compared with resident Danes in each commune using the Spearman Rank Correlation technique. (Although some of the reported cases of mental illness could also have included resident Danes, an assumption was made that all reported cases were made up of Greenlanders.)

A major distinction noted was that Frederikshåb and Godthåb had a higher number of cases of mental illness than the two northern communes (Sukkertoppen and Holsteinsborg). Why this should be, is not clear. The administrative "atmosphere" and large number of Danes in Godthåb (reflecting the presence of Western European work ethics and values) may partly explain the high figure for that town. Also, its hospital accepts exceptionally difficult cases from all of Greenland.

Spearman Rank Correlations for the four communes were as follows: Frederikshåb, .6000; Godthåb, .7697; Sukkertoppen, .7728; and Holsteinsborg, .6472.

Probably the best indication of a social diseconomy resulting from rapid urbanization clashing with a newly emerged formerly primitive hunting society, are remarks found within KGH's trawler operations reports. In the report for 1973, it is noted:

> On several occasions during the year it was necessary to postpone sailings between 6:00 PM and 8:00 AM because it wasn't possible to gather the crew even though departure time had been announced well in advance. Such occurrences have caused 12 hour delays in announced departure times (author's translation);

and

> Furthermore there was, in one case, apparently some possibility that part of a crew might call a wildcat strike. The reasons for such unrest are by no means clear (author's translation). (Den Kongelige Grønlandske Handel, 1974, p. 2.)

SUMMARY

Local siting conditions and situations relative to the rich fishing banks off West Greenland are primary explanations for the distribution of population centres in the 'Open-Water' region. Continual urban growth in major towns has gone beyond expectations of planners. The lack of level or serviceable land represents a real problem.

Population declines have been more severe in settlements than in villages. Some migrations have occurred from settlements to villages. Although these migrations have perhaps checked further declines in village populations, major movements have been toward towns where demands for labour were created. In-migration to towns was heavier in the 1962-1972 period than in the preceding nine-year period.

Regionally, in-migrations were heaviest from Disko Bay. South Greenland contributed the smallest number. Return flows, or out-migration to other regions, were greatest in the case of South Greenland. In the Hunting Districts, return flows from the 'Open-Water' region were less than one-half those that migrated to the 'Open'Water' region. The varied economic bases in the three regions have also functioned to retain or encourage out-migration to 'Open-Water' communes. This is in addition to the various migration incentives.

The plans of G-60 had the effect of increasing employment in towns. Employment in villages declined. Most employment sectors also showed gains. Relative to the total percentage increase for the region, only "Manufacturing," "Construction," and "Services" showed gains.

Godthåb had a relative increase in employment compared to the other three towns.

The *indhandling* system, as modified by Danish planners, transferred to the towns increased purchasing power of consumer goods. Since the *indhandling* system was spatially discriminatory, fishermen began to trade-in catches to towns. The income from *indhandling* cannot explain high consumption rates in towns as it does in the smaller places. The effect though was to hasten out-migration of fishermen to towns and a subsequent closing-down of uneconomic *bygder*. Parallelling the relocation of fishermen was a trend towards larger, but fewer, boats. The effect has been more pronounced in villages than in towns.

Investment in towns was first in Direct Productive Activities, but Social Overhead Capital investment began to increase rapidly after 1961. It assumed a more significant role in the overall investment structure. Social Overhead Capital (SOC) and Economic Overhead Capital (EOC) investments kept pace with each other. The government prepared itself to service both the basic industry and the workers of that industry. This is consistent with the views of Hansen regarding investment in underdeveloped regions and as described in Dicken and Lloyd. Investment in housing has attracted people to move into the 'Open-Water' towns.

The migration of Greenlanders to 'Open-Water' towns as a result of of housing assistance, other infrastructural investments, and the indhandling system were generally successful as methods for developing growth points in the 'Open-Water' region.

Unfortunately, contacts with a larger segment of Danes than was previously the case before 1950, have created some serious social problems among Greenlanders.

Chapter VI

CONCLUSION

This thesis has attempted to study the means by which growth points were developed in a backward region of a developed country and the impact of the policy. Greenland, the most northern portion of the Danish realm, represents an application of this particular regional development policy in a northern lands setting.

Settled almost 250 years ago, Greenland soon became isolated from the rest of the world as part of a protective and paternalistic Danish policy. Undoubtedly, the policy reflected Danish experiences with the harsh physical environment, fluctuating resource bases, and vast distances from major markets. The policy also represented an expression of concern for the cultural development of native Greenlanders.

In 1953 Greenland's relationship to Denmark was altered. It now became an integral part of the realm and a decision was taken that living standards and cultural development in Denmark proper should be extended to the new citizens of 'Denmark North.' The commune system was restructured; some regions were designated for development; in others, populations were relocated, and some rationalizations were made in the expensive supply system. It was hoped that these changes would

attract private capital to Greenland. This did not happen.

The G-60 Report recognized shortcomings in the 1950 Greenland Commission study. The state now began to play a major role in production. The capacity of the fishing fleet was widened and advantages of the 'Open-Water' region in Southwest Greenland were clearly recognized.

Four towns in this region were chosen as growth points—Frederikshåb, Godthåb, Sukkertoppen, and Holsteinsborg. The government chose two methods for securing the necessary labour force for planned expansions in processing. The first method was attractive in that migration grants and more suitable housing were made available if a family relocated in an 'Open-Water' town. The other method was coercive insofar as spatial discriminations were applied to the *indhandling* system.

Analyses of the effects of these methods on the various inhabited places revealed that "settlements" (*bopladser*) have been virtually eliminated. "Villages" (*bygder*), while losing population to "towns," have been more successful in maintaining their viability. This was largely a matter of their being designated within the *indhandling* system.

The discriminatory *indhandling* system functioned to concentrate fish landings in towns. Due to the presence of processing and other employment sectors, relationships between *indhandling* and consumption in the towns are weak. In other centres, relationships between *indhandling* and consumption were found to be very high. The effect of

The discriminatory *indhandling* system was to concentrate fishermen in towns.

The attractive method was also considered to be reasonably successful in that relationships between housing assistance and migrations to 'Open-Water' towns were reasonably strong. Much of the in-migrating population to the 'Open-Water' towns, i.e. the growth points, came mainly from the Disko Bay region and the Hunting Districts. Absolute employment increased in all the towns, but relative to the regional mean growth rate, Godthåb experienced greater growth than the other three.

Analyses of sectoral changes showed that "Manufacturing," "Construction," and "Services" had increased throughout the region at rates that were higher than the regional mean. When the towns were analyzed for each sector, "Fishing," "Transportation," and "Trade and Sales" showed slight relative gains. Although employment in "Construction" had the largest relative increase, the "Services" sector experienced the largest relative decrease.

While employment in economic sectors has been broadened so that a greater diversity in the employment structure now exists, we have no firm evidence to establish linkages emanating from the "growth" industry. This is because of the overwhelming presence of government activities which inject more than 100 million dollars a year in the economy in the form of numerous transfer payments. It is therefore difficult, at this point in time, to analyze the *real* effect of the fishing industry on the growth points.

Nevertheless, it can be stated that Denmark has successfully established growth points in Greenland.

The methods used may be considered as planning "levers." From a geographic—and perhaps an economic—point of view, the experiment in Greenland has been a success. It has been decided however, that because of the disastrous social consequences, the concentration/urbanization process will be slowed down. Knud Hertling, the Governor of Greenland, commenting on the future Greenland policy, states:

> One of the areas in which the new policy is expressed most clearly is the geographic distribution of the Greenland population, as also among Danish politicians, increasing resistance has been noticed to the policy at having a very large proportion of the population in Greenland concentrated in the socalled open water towns. . . . Because of the heavy decline in the cod fisheries in the Davis Strait and considering the experiences gained by us in respect of the social effects of a too pronounced unbanization, action has, however, now been taken, aimed at putting a brake on the migration to the large towns. In consequence hereof it will be necessary, though to devote greater efforts to the smaller towns and settlements where the characteristics of the Greenland environment can be maintained through moderation of the pace of developments (Hertling, 1972, p. 5).

Hertling has touched upon one of the more critical issues in the present-day dialogue on development—the role(s) of northern peoples. Nils Ørvik, in attempting to elaborate a "theory of northern development," discussed the centralization/urbanization question in Greenland:

> The real issues are (1) whether the native community in Greenland would have been content with a slower rate and lower level of modernization, or (2) whether the Danish taxpayers in the South would have agreed to pay the increased price which a decentralized modernization would have required in order to reach the same results that could be achieved through the centralized approach (Ørvik, 1975, p. 16).

In terms of regional development criteria in the wider setting, it is claimed that information regarding expectations of investment in the North American "North" are not known (Boreal Institute, 1968, p. 35). Indeed, this may represent a topic for future research. More specifically, can equations be developed, based on various resource capabilities, which would determine upward limits for investment in growth points in a northern land or other similar frontier environment?

Furthermore, this study has not attempted to consider the internal organization and arrangement of growth points. An optimal settlement pattern could be identified through a comparative review of the Greenlandic experience in establishing growth points in Greenland.

Finally, it has been noted that out-migration from the growth points has occurred in Greenland. This behaviour contradicts the Danish effort to attract migrants. Further research would discover processes for decisions to leave the 'Open-Water' region.

The significance of the Danish effort in Greenland may not be what it has accomplished, but rather the means that were utilized and problems encountered in establishing growth points in the North.

BIBLIOGRAPHY

Published

ALEKSEEV, B. P., KUDLO, V. N. *et al.* "Some Aspects of Water Circulation in the Northwest Atnaltic in 1960-69." Symposium on Environmental Conditions in the Northwest Atlantic, 1960-69. *Special Publication No. 8.* Dartmouth, N.S.: International Commission for the Northwest Atlantic Fisheries (ICNAF), pp. 149-166.

ALONSO, W. "The Location of Industry in Developing Countries." Proceedings of Interregional Seminar, 14-26 August, 1968—Minsk. *Industrial Location and Regional Development.* New York, United Nations, 1971, pp. 3-36.

ARMSTRONG, T. "The Soviet North," *Survey,* April 1968, pp. 117-121.

ATLANTIC PROVINCES ECONOMIC COUNCIL. *The Norwegian Approach to Regional Economic Development.* Halifax, 1962, 12 pp.

BARFOD, P. "Træk af Grønlands Økonomi og Erhversliv Siden 1950," *Grønland 1958,* 9, September, pp. 332-344.

BERETNINGER VEDRØRENDE GRØNLAND. "Almindelig beretning." København.

BERETNINGER VEDRØRENDE GRØNLAND. "Årsberetning . . . Den Kongelige Grønlandske Handel." København.

BERETNINGER VEDRØRENDE GRØNLANDS STYRELSE, 1942. *Sammendrag af Statistiske Oplysninger.* København, 607 pp.

BERETNINGER VEDRØRENDE GRØNLAND (1952, 1957-1970). "Sundhedstilstanden i Grønland." København.

BERNARD, P. *Growth Poles and Growth Centres in Regional Development, Vol. III.* Geneva: United Nations Research Institute for Social Development, Report No. 70.14, 95 pp.

BETÆNKNING AFGIVET AF DET AF MINISTEREN FOR GRØNLAND under 19 Februar 1959 Nedsatte Udvalg Vedrørende Besejling af Grønland (Betænkning Nr. 227). København: Statens Trykningskontor, 1959, 174 pp.

BETÆNKNING AFGIVET DEN 12 june 1946 af Rigsdagens Grønlandsudvalg, Forening med en af de Grønlandske Landsraad Valgt Delegation og Repræsentanter For Grønlands Styrelse. København: J. H. Schultz A/S, 1946, 54 pp.

BETÆNKNING FRA GRØNLANDS—Udvalget af 1960 (Betænkning Nr. 363). København: Statens Trykningskontor, 1964, 190 pp.

BETÆNKNING VEDRØRENDE BOLIGBYGGERIET I GRØNLAND (Betænkning Nr. 692). København: Statens Trykningskontor, 1973, 130 pp.

BREDSDORFFS TEGNESTUE, PETER, og GTO's Planlægnings Sektion. *Godthåb Byplan—Dispositionsplan Tekst*. København, 1967, 115 pp.

BOGEN OM GRØNLAND. København: Politikens Forlag, 1970, 411 pp.

BOREAL INSTITUTE. *Higher Latitudes of North America: Socio-Economic Studies in Regional Development*. Proceedings of a Symposium at the 19th Alaskan Science Conference, Whitehorse, Yukon, Canada, August 28-30, 1968. The University of Alberta, Occasional Publication No. 6, 37 pp.

BORNEMANN, C. "Grønland." In *Borger i Danmark: Nøgle til Det Moderne Samfund*, Bd. II (K. Helveg Petersen, ed.). København: Branner & Korch, 1970, pp. 5-36.

BORNEMANN, C. "Økonomisk Udvikling i Grønland," *Mentalhygiejne*, 7-8, 1969, pp. 167-172.

BOSERUP, M. *Økonomisk Politik i Grønland*. København: Grønlandsudvalget, 1963, 473 pp.

BOUDEVILLE, J. R. *Problems of Regional Economic Planning*. Edinburgh: University Press, 1966, 192 pp.

BREWIS, T. N. *Regional Economic Policies in Canada*. Toronto: The Macmillan Company of Canada, 1969, 303 pp.

BYLUND, E. "Growth Centre and Administrative Area Problems Within the Framework of the Swedish Location Policy." In *Growth Poles and Growth Centres in Regional Planning* (Anton Kuklinski, ed.). The Hague: Mouton & Company, 1972, pp. 231-242.

CAMERON, G. *Regional Economic Development: The Federal Role* ("Resources for the Future"). Baltimore: Johns Hopkins Press, 1970, 161 pp.

COLE, J. P., and KING, C. A. M. *Quantitative Geography*. New York: Wiley & Co., 1968, 692 pp.

COULL, J. R. *The Fisheries of Europe—An Economic Geography*. London: G. Bell & Sons, Ltd., 1972, 240 pp.

DANMARKS STATISTIK. *Grønland—Folke—og Boligtællingen 31 december 1970*. København, 1974, Tabel 2.

DANMARKS STATISTIK. *Grønland—Folke—og Boligtællingen 31 december 1965.* Statistisk Tabelværk IX. København, 1969, Tabel 16.

DARWENT, D. R. "Growth Poles and Growth Centres in Regional Planning—A Review." *Environment and Planning,* 1969, pp. 5-32.

DOWNS, A. "Some Principles of Regional Economic Development." In *Regional Economic Development* (Ch. 4). Washington, D.C.: Economic Development Administration (EDA), U.S. Department of Commerce, 1967, pp. 2-17.

DUNBAR, M. J. "Greenland During and Since the Second World War," *International Journal,* Vol. 5, No. 2, Spring 1950, pp. 121-140.

DUNBAR, M. J. "The State of the West Greenland Current Up to 1944," *Journal Fisheries Research Board of Canada,* Vol. VI, No. 7, 1946, pp. 460-471.

DUNLOP, J. T. "Evolution of Factors Affecting Productivity." In *Problems in Economic Development* (E. A. G. Robinson, ed.). London: Macmillan & Co., 1969, pp. 350-357.

ESTALL, R. C. *New England: A Study in Industrial Adjustment.* London: G. Bell & Sons, 1966, 296 pp.

FISKERIMINISTERIET. *Fiskeriårbogen* (1962-1972). København.

FOLKETINGET. *Lovforslag Nr. 69, Lov om Opførelse af Fiskeindustrianlæg M.V. og om Bygning af Havne: Grønland* (1958-1959). Blad nr. 152. København.

FRIED, J. "Urbanization and Ecology in the Canadian Northwest Territories," *Arctic Anthropology,* Vol. 3, No. 2, March 1964, pp. 55-60.

FRIEDMANN, J. "Integration of the Social System: An Approach to the Study of Economic Growth," *Diogenes,* Vol. 33, 1961, pp. 75-97.

FRIEDMANN, J. *Regional Development Policy: A Case Study of Venezuela.* Cambridge, Mass.: The M. I. T. Press, 1966, 279 pp.

FRISTRUP, B. (ed.). "Physical Geography of Greenland," *Folia Geographica Danica,* 9. København: C. A. Reitzils Forlag, 1961, 175 pp.

FRISTRUP, B. *The Greenland Ice Cap.* Copenhagen: Rhodos, 1966, 298 pp.

FRISTRUP, B. *Grønlands Geografi* n.p. Gyldendal, 1965, 80 pp.

GAD, F. *The History of Greenland I: Earliest Times to 1700.* London: C. Hurst & Co., 1970, 318 pp.

GAD. F. *The History of Greenland II: 1700 to 1782.* London: C. Hurst & Co., 1973, 429 pp.

GIBSON, J. R. "The Canadian and Russian Northlands: Critical Contrasts," *Discussion Paper No. 2.* York University, Department of Geography, 1972, 21 pp.

GORDON, H. S. "The Economic Theory of a Common Property Resource: The Fishery." *Journey of Political Economy,* Vol. 62, No. 2, April 1954, pp. 124-142.

GRØNLANDSKOMMISSIONENS BETÆNKNING, 1. "Indledning, Placering og Udformning af Bebbyggelser, Den Fremtidge Anlægsvirksomhed." København, 1950a, 60 pp.

GRØNLANDSKOMMISSIONENS BETÆNKNING, 2. "Politiske og Administrative Forhold: Retsplejn." København, 1950b, 126 pp.

GRØNLANDSKOMMISSIONENS BETÆNKNING, 5. "Erhvervsmæssige og Økonomiske Forhold, 1." København, 1950c, 94 pp.

GRØNLANDSRÅDET. *Rapport til Grønlandsrådet vedrørende status og udviklingsplan for Fiskeriet og produktionen i Grønland* (Dok. nr. 12). København, n.n., 1965a, 19 pp.

GRØNLANDSRÅDET. *Rapport II til Grønlandsradet vedrørende status og udviklingsplan for Fiskeriet og produktionen i Grønland* (Dok. nr. 31). København, n.n., 1965b, 16 pp.

GRØNLANDSRÅDET. *Lokaliseringspolitikken* (Dok. nr. 63, Résumé). København, n.n., May 1966a, 17 pp.

GRØNLANDSRÅDET. *Udkast til investeringsplan for 1966-70* (Dok. nr. 30). København, n.n., 1966b, 85 pp.

GRØNLANDSRÅDET. *Befolkningens lokalisering i 1985* (Dok. nr. 22). København, n.n., 1967, 15 pp.

GRØNLANDSRÅDET. *Lokaliseringspolitikken* (Dok. nr. 28). København, n.n., November 1968, 9 pp.

GRØNLANDSRÅDET. *Vandringerne i 1967* (Dok. nr. 19). København, n.n., 1969, 9 pp.

GRØNLANDSUDVALGET. *Den Økonomiske Politik I Grønland Efter 1950* (Dok. nr. 2). København, 1960, 92 pp.

"Grønlands Landsråds Forhandlinger 1959." *Beretninger vedrørende Grønland*, 374 pp.

HANDELSINSPEKTORATET. *Rapport vedrørende driften af statens trawlere i 1973*. Godthåb: Den Kongelige Grønlandske Handel, 1974, 10 pp.

HANSEN, N. M. *French Regional Planning*. Bloomington: Indiana University Press, 1968, 319 pp.

HANSEN, P. M. and HERMANN, F. "Fisken og Havet ved Grønland," *Skrifter Fra Danmarks Fisker—og Havundersøgelser, Nr. 15*. København: C. A. Reitzel, 1953, 128 pp.

HAUSER, P. M. "Population and Labour Force Resources as a Factor in Economic Development." In *The Challenge of Development* (Richard J. Ward, ed.). Chicago: Aldine Publishing Company, 1967, pp. 110-121.

HEDTOFT, H. "Baggrund for nedsættelsen af den store Grønlandskommission," *Grønland 1953*, 1, January, pp. 1-10.

HEDTOFT, H. "Grønlands Fremtid," *Grønland 1949*, 1, January, pp. 1-8.

HERTLING, K. "The Government's Greenland Policy," *Ny Politik*, April 1972, pp. 1-5.

HILHORST, J. "Regional Development Theory." In *Multidisciplinary Aspects of Regional Development*. Paris: OECD, Development Centre of the Organ, 1969, pp. 21-34.

Hirschman, A. O. *The Strategy of Economic Development*. New Haven: Yale University Press, 1958, 217 pp.

HOOVER, E. M. *The Location of Economic Activity*. New York: McGraw-Hill, 1948, 300 pp.

JACKSON, N. "With the Doctor Boat Along the Greenland Coast." *Geographical Review*, Vol. 33, No. 3, October 1943, pp. 545-568.

JENNESS, D. "Eskimo Administration: V. Analysis and Reflections," *Technical Paper No. 21*. Montreal: Arctic Institute of North America, 1968, 59 pp.

JENNESS, D. "Eskimo Administration: IV. Greenland," *Technical Paper No. 19*. Montreal: Arctic Institute of North America, 1967, 174 pp.

JONES, D. N. "Regional Development Planning: The Alaskan Experience." *The Annals of Regional Science*, Vol. 2, No. 2, December 1968, pp. 203-213.

JUDD, D. "Canada's Northern Policy: Retrospect and Prospect." *The Polar Record*, Vol. 14, No. 92, May 1969a, pp. 593-602.

JUDD, D. [A]. "Resources Administration in Northern Canada." *The Polar Record*, Vol. 14, No. 93, September 1969b, pp. 791-806.

KARPOV, L. N., LEBEDERA, S. L., and SOPOLOV, M. N. "Progress and Distribution of the Factors of Production of the Arctic Regions of Norway, Sweden, and Finland Since the Second World War," *Problems of the North*, No. 12, 1969, pp. 293-308.

KOEFOD, P. E. "Some General Problems of Economic Development," *Land Economics*, Vol. 42, No. 3, August 1966, pp. 247-259.

LAURITZEN, P. *Reportager Fra Grønland*. København: Information, 1974, 99 pp.

LIDEGAARD, M. "Grønlændere og Den Moderne Udvikling." In *Grønland I Fokus*. København: Nationalmuseet, 1969, pp. 119-124.

LLOYD, P. E. and DICKEN, P. *Location In Space: A Theoretical Approach to Economic Geography*. New York: Harper & Row, 1972, 267 pp.

MARCUS, G. J. "The Greenland Trade-Route," *Economic History Review (New Series)*, 7, 1954/55, pp. 71-80.

MATTOX, W. G. "Fishing in West Greenland, 1910-1966, the Development of a New Native Industry," *Meddelelser Om Grønland*, Bd. 197, Nr. 1, 1973, 297 pp.

MINISTERIET FOR GRØNLAND. *Grønland . . . Årsberetning(er)*. København.

MINISTERIET FOR GRØNLAND. *Perspektivplan For Grønland, 1971-85*. København, n.n., 1970, 227 pp.

MINISTERIET FOR GRØNLAND. "Folke—og boligtællingen i Grønland, 31 december 1970," *Meddelelser Fra Økonomisk-Statistisk Kontor Nr. 25*. København, November 1972, pp. 1-13.

MINISTERIET FOR GRØNLAND. "Boligbyggeriet I Grønland, 1972," *Meddelelser Fra Økonomisk-Statistisk Kontor Nr. 32*. København, January 1974a, 27 pp.

MINISTERIET FOR GRØNLAND, Fiskeriudvalget. *Rapport vedrørende trawlerfiskeri og beskæftigelse samt redegørelse og forslag til udbygning af Fiskerisektoren i det grønlandske åbentvandsområde*. København, 1974b, 30 pp.

MYRDAL, G. *Economic Theory and Underdeveloped Regions*. London: Methuen & Company, 1957, 164 pp.

NATIONAL RESOURCES COMMITTEE. *Regional Planning—Part VII — Alaska—Its Resources and Development*. Washington, D.C.: United States Government Printing Office, 1938, 213 pp.

NIELSEN, F. "Planned Reforms in Greenland," *Arctic*, Vol. 4, No. 1, May 1951, pp. 2-17.

NORTH, D. C. "Location Theory and Regional Economic Growth," *Journal of Political Economy*, Vol. 63, No. 3, June 1955, pp. 243-258.

NORTH, R. N. "Soviet Northern Development: The Case in N.W. Siberia," *Soviet Studies*, Vol. 24, No. 2, October 1972, pp. 171-199.

OECD. *Fishery Policies and Economies, 1957-1960*. Paris: Organization for Economic Co-operation and Development (OECD), 1970, 514 pp.

OLSEN, G. A. "Sexual Norms Under the Influence of Altered Cultural Patterns in Greenland," *Acta Psychiatrica Scandinavica*, Vol. 42, Fasc. 2, pp. 148-158.

PARR, J. B. "Regional Development." In *Focus on Geography* (Philip Bacon, ed.). Washington, D.C.: National Council for the Social Studies, 1970, pp. 121-146.

PENOUIL, M. "Growth Poles in Underdeveloped Regions Countries." In *Growth Poles and Regional Policies* (Anton Kuklinski and R. Petrella, eds.). The Hague: Mouton, 1972, pp. 119-133.

PERLOFF, H. S. and DODDS, V. W. "How a Region Grows: Area Development in the U.S. Economy," *Supplementary Paper No. 17*. Washington, D.C.: Committee for Economic Development, 1963, pp. 137-145.

PERROUX, F. "Note sur la notion de 'pôle de croissance,'" *Economie appliqué*, January/June 1955, pp. 307-320.

PORSILD, A. E. "Denmark's Five-Year Plan for Greenland," *Arctic Circular*, Vol. 1, No. 6, August 1948, pp. 65-67.

REA, K. J. *The Political Economy of the Canadian North*. Toronto: University of Toronto Press, 1968, 328 pp.

ROBINSON, I. M. "New Industrial Towns on Canada's Resource Frontier," *Research Paper No. 73*. Chicago: Department of Geography, The University of Chicago, 1962, 177 pp.

ROGERS, G. W. *The Future of Alaska*. Baltimore: The Johns Hopkins Press, 1962, 293 pp.

ROSENDAHL, P. "Grønlænderes Boliger," *Grønland 1948*, 1948, pp. 118-127.

ROSENDAHL. P. "Prisdifferentiering som middel til Befolknings-Koncentration," *Tidsskrift For Den Grønlandske Tjenestemandsforening*, 7, July 1961, pp. 8-18.

ROSTOW, W. W. *The Staces of Economic Growth*. Cambridge: Cambridge University Press, 1960, 167 pp.

SHABAD, T. "Changing Resource Policies in the U.S.S.R.," *Focus*, Vol. 19, No. 6, February 1969, pp. 1-9.

SOMMERS, L. and GADE, O. "The Spatial Impact of Government Decisions on Postwar Economic Change in North Norway," *Annals of the Association of American Geographers*, Vol. 61, No. 3, September 1971, pp. 522-536.

SMIDT, E. "Det Grønlandske bundgarnsfiskeri," *Skrifter Fra Danmarks Fiskeri— og Havundersøgelser, Nr. 25*, 1965, pp. 63-73.

"Statistiske oplysninger om udviklingen i Grønland 1948-1958," *Beretninger vedrørende Grønland*, Nr. 6, 1960, 52 pp.

STONE, K. H. "Norway's Internal Migration to New Farms Since 1920," *European Demographic Monographs*. The Hague: Martinus Nijhoff, 1971, 74 pp.

SVEISTRUP, P. P. "Economic Principles of the Greenland Administration Before 1947," *Meddelelser Om Grønland*, Bd. 150, Nr. 1, 1949, 215 pp.

SVEISTRUP. P. P. "The Economy of Greenland," *Meddelelser Om Grønland*, Bd. 182, Nr. 1, 1967, 218 pp.

SVEISTRUP, P. P. "Grønlands økonomi før 1940," *Grønland 1964*, No. 6, June 1964, pp. 231-240.

THE ROYAL GREENLAND TRADE DEPARTMENT. *Spotlights on Greenland* (Jens Fynbo and K. E. Jørgensen, eds.). København, 1973, 99 pp.

THOMAS, M. D. "The Export Base and Development Stage Theories of Regional Economic Growth: An Appraisal," *Land Economics*, Vol. 40, No. 4, November 1964, pp. 421-432.

TIEBOUT, C. M. "Exports and Regional Economic Growth," *Journal of Political Economy*, Vol. 64, No. 2, April 1956, pp. 256-264.

TIEBOUT, C. M. *The Community Economic Base Study.* New York: Committee for Economic Development, 1963, 103 pp.

TOWFIGHI, P. S. "Strategies for Regional Growth in Developing Countries," *Human Settlements*, Vol. 2, No. 3, July 1972, pp. 32-37. (Issued by the Centre for Housing, Building and Planning, Department of Economic and Social Affairs. New York: United Nations.)

TRAP, J. P. "Grønland," *Danmark*, Bind XIV (Niels Nielsen, Peter Skautrup and Christian Vibe, eds.). N.p. G.E.C. Gads Forlag, 1970, 687 pp.

UDVALGET FOR SAMFUNDSFORSKNING I GRØNLAND. *Befolkningssituationen i Vestgrønland.* København, 1963, 94 pp.

UNITED NATIONS. United Nations Industrial Development Organization, *Industrial Location Planning.* (International Symposium on Industrial Development, 29 November – 20 December.) 1967, 49 pp.

VIBE, C. "Arctic Animals in Relation to Climatic Fluctuation," *Meddelelser Om Grønland*, Vol. 170, No. 5, 1967, 227 pp.

VORREN, Ø. "The Moddern Lapps," *Archives of Environmental Health*, Vol. 18, No. 1, January 1969, pp. 115-121.

WIRTH, L. "Culture Conflict and Misconduct." In *Louis Wirth—On Cities and Social Life* (Albert J. Reiss, Jr., ed.). Chicago: The University of Chicago Press, 1964, pp. 229-243.

YEATES, M. H. *An Introduction to Quantitative Analysis in Economic Geography.* New York: McGraw-Hill, 1968, 182 pp.

Ølgaard, H. "Byggeriet i Grønland." In *Grønland i Fokus.* København: Nationalmuseet, 1969, pp. 37-46.

Unpublished

DEN KONGELIGE GRØNLANDSKE HANDEL. "Oversigter over udgifter ved togtning i Grønland i tiden . . ."

HANSEN, J. C. "Regional Disparities in Norway with Reference to Marginality." A paper presented at Institute of British Geographers, Annual Conference, Aberdeen, U.K., January 4-8, 1972, pp. 1-14.

MINISTERIET FOR GRØNLAND. "Mandtalslisterne" (1953-1972). København.

MINISTERIET FOR GRØNLAND. "Regnskabsanalyser" (1951-1972). (Økonomisk/ Statistisk Kontor.) København.

SVENDSEN, V. "Statens pris- og lønpolitik i Grønland efter 1950." Unpublished Ms Thesis, University of Copenhagen, September 1958, 120 pp.

ØRVIK, N. "Toward a Theory of Northern Development: The Greenland Case." A paper presented to the 1975 conference of The Canadian Political Science Association, Edmonton, June 4, 1975. (With permission of author)

APPENDIX I

Mean Temperature and Precipitation, Greenland, 1971

Mean Temperature and Precipitation, Greenland, 1971

(January and July, selected places)

Place	January		July		Year	
	C°	mm (total)	C°	mm (total)	C°	mm (total)
Nanortalik	-3.1	125.1	7.1	78.0	1.5	62.3
Frederikshåb	-6.5	37.8	6.0	73.1	-1.6	70.3
Godthåb	-7.4	15.1	7.4	50.4	-2.3	56.9
Sukkertoppen	-8.5	7.8	7.9	83.2	-2.7	46.0
Holsteinsborg	-14.3	9.3	6.4	39.1	-5.6	27.4
Umanak	-15.1	.1	10.8	.1	-5.0	9.8
Thule	-25.8	2.3	5.6	17.7	-10.7	7.4
Angmagssalik	-11.8	122.3	7.5	10.0	-3.0	65.4

Source: *Grønland 1973 Årsberetning*, "Tabelafdeling," Ministeriet For Grønland, pp. 121-122.

APPENDIX II

COMMUNICATION

Copy of communication, October 6, 1949, from Post elementary school principal, Fred Nielsen to Department Head Koch.

Julianehåb, October 6, 1949

Dear Koch,

After the Commission's visit, I carried out an official tour of the Kap Farvel region. My wife accompanied me and we spent 10 days travelling by motor boat. We came to the most southerly inhabited place and saw poverty and suffering—a despair which is only possible when people have completely lost faith in the future. Settlement Nuk is located at the mouth of Prins Christian Sound on a little foreland at the foot of some high mountains. In former times the whole area had many seals, but now they are rapidly disappearing and even fishing possibilities are poor. There are now about 70-80 people here and most of them would like to move as soon as possible. I spoke with the old catechist who said, "We thought we could have been moved by summer. Now winter is coming and we dread what lies ahead." The same can be said for Augpilagtok village. The population's wish to move has been considered in the Greenland Council this summer. Because of the Administration's plans concerning houses for migrants in Narssak, we haven't been able to do anything, but strongly advise that they render some aid for a migration of Kap Farvel's population as soon as possible. We have experienced an earlier move which was badly organized and frightening; we don't want to make a mistake again. These people from the Kap Farvel region should not only be moved, but at the same time they should have a chance to better their existence not the least of which is housing—a type that can be considered as a real home—and where children can grow up under conditions of human dignity.

I know that the Commission feels the same way, and I can only advise that this matter—the relocation of Kap Farvel's population—be effected quickly and in the right way (author's translation).

(Signed)

Fr. Nielsen

Source: *Grønlandskommissions Betænkning*, Bd. 1, "Indledning Placering of Udforming af Bebyggelser Den Fremtidge Anlægsvirksomhed," Bilag 8, 1950, p. 69.

APPENDIX III

POPULATION

(people born in Greenland)

GODTHÅB COMMUNE

Place	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	Category*
Godthåb Town	1838	2214	2360	2598	2746	2767	2968	3179	3322	3656	3908	4721	4867	5586	6104	6790	7166	7478	7974	8258	T
Fiskenæsset	202	198	197	216	221	253	258	288	299	324	306	332	341	349	331	332	336	336	332	314	V
Kôrkut	17	13	14	18	16	18	6	12	10	10	12	8	4	1	1	1	5	6	5	4	S
Kôrnok	207	252	259	289	242	265	265	227	234	289	232	185	150	136	77	102	79	65	-	-	V
Kapisigdlit	212	214	217	322	253	289	289	302	306	306	278	257	245	223	231	221	217	187	169	165	V
Grædefjorden	29	36	36	24	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S
Itivnera	2	7	5	9	12	13	9	11	8	8	10	8	7	3	3	2	2	3	2	2	S
Neriunak	68	61	39	39	53	35	28	16	29	13	16	12	8	9	11	11	10	9	9	8	S
Kangek	146	155	138	145	141	156	159	155	172	161	144	150	137	143	137	138	112	88	73	45	V
Ivarssak	91	79	83	84	79	82	73	87	82	75	74	63	-	-	-	-	-	-	-	-	V
Utorqarmiut	17	18	12	20	12	12	13	15	13	13	13	-	-	-	-	-	-	-	-	-	S
Færingehavn	5	5	6	6	6	7	13	13	14	21	20	25	24	37	38	32	36	37	30	25	S

* T — Town
V — Village
S — Settlement

Source: — Ministeriet For Grønland, "Mandtalslisterne" (1953-1972) (unpublished).
— *Beretninger vedrørende Grønland*, "Almindelig beretning," Nr. 1, 1956, pp. 81-83.

FREDERIKSHÅB

Place	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	Category**
Frederikshåb	683	727	765	823	862	965	958	1038	1034	1129	1193	1278	1367	1599	1740	1880	1949	2118	2284	2405	T
Avigait	92	92	99	88	95	97	98	103	100	108	114	122	113	109	101	84	78	79	78	70	V
Storø	38	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S
Kvanø	96	92	93	93	97	86	89	86	72	66	50	-	-	-	-	-	-	-	-	-	S
Narssalik	74	70	70	69	78	81	80	85	89	90	82	89	91	93	87	79	81	73	50	26	V
Neria	93	94	93	89	87	89	94	93	90	92	95	96	89	44	-	-	-	-	-	-	S
Iliuilârssuk	53	47	49	53	50	46	46	44	43	31	31	-	-	-	-	-	-	-	-	-	S
Årsûk	301	312	319	327	328	344	368	368	365	362	364	370	358	366	395	393	388	380	376	356	V

** T — Town
V — Village
S — Settlement

Source: — Ministeriet For Grønland, "Mandtalslisterne" (1953-1972) (unpublished).
— *Beretninger vedrørende Grønland*, "Almindelig beretning," Nr. 1, 1956, pp. 81-83.

SUKKERTOPPEN

Place	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	Category**
Sukkertoppen	1160	1251	1326	1492	1488	1539	1600	1636	1690	1855	1990	2057	2138	2285	2508	2587	2600	2585	2864	2873	T
Kangâmiut	422	413	448	420	487	491	519	552	561	595	665	652	675	671	633	639	638	618	609	611	V
Agpamiut	103	90	72	84	85	91	87	75	-	-	-	-	-	-	-	-	-	-	-	-	S
Timerdlit	9	4	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S
Ikamiut	31	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S
Kangerdluarssuk*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S
Napassok	168	166	163	133	187	190	199	204	215	222	227	213	229	229	235	250	256	240	241	250	V
Ikerasak*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S
Atangmik	162	157	165	169	182	186	181	183	192	192	187	199	201	191	185	184	184	185	186	187	V
Tovqussak	3	2	4	7	7	8	8	16	12	4	-	-	-	-	-	-	-	-	-	-	V

* Kangerdluarssuk 1952: 27

* Ikerasak 1952: 12

** T — Town
V — Village
S — Settlement

Source: — Ministeriet For Grønland, "Mandtalslisterne" (1953-1972) (unpublished).
— *Beretninger vedrørende Grønland*, "Almindelig beretning," Nr. 1, 1956, pp. 81-83.

HOLSTEINSBORG

Place	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	Category***
Holsteinsborg	1227	1267	1335	1383	1493	1544	1640	1714	1754	1988	2260	2402	2498	2718	2951	3113	3232	3362	3533	3753	T
Itivdlek	207	190	203	193	224	243	235	246	258	241	234	215	191	193	162	176	186	161	138	113	V
Ikerasarssuk	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S
Sarqardlit	72	76	69	62	63	53	58	52	40	-	-	-	-	-	-	-	-	-	-	-	S
Sarfánguak	140	133	130	142	130	166	164	169	178	173	171	163	142	130	132	135	126	129	123	129	V
Umanarssuk	61	65	73	75	80	75	64	61	55	44	-	-	-	-	-	-	-	-	-	-	S
Ikerasak	31	27	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S
Avssaqutak (Kerrortussok)	108	113	78	82	97	94	89	89	91	67	69	64	62	57	38	30	18	-	-	-	V
Sarqaq*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Søndre Strømfiord**	———	———	———	———	———	———	———	———	———	———	———	———	———	579	499	589	604	568	589	626	

* Sarqaq 1952: 44

** Søndre Strømfiord was included in the commune in 1966. It is not designated as a village or settlement. Instead, it is considered an "airport." Much of the population is made up of maintenance and service personnel who maintain the aircraft and provide services in the hotel for transient passengers.

*** T — Town
V — Village
S — Settlement

Source: — Ministeriet For Grønland, "Mandtalslisterne" (1953-1972) (unpublished).
— *Beretninger vedrørende Grønland*, "Almindelig beretning," Nr. 1, 1956, pp. 81-83.

APPENDIX IV

Government-Subsidized Residential Construction

Government-Subsidized Residential Construction

Region	1965		1966		1967		1968		1969		1970		1971		1972		Total
	T*	V*	T	V	T	V	T	V	T	V	T	V	T	V	T	V	
	(number residential units)																
Southwestern Greenland	56	10	71	9	105	7	54	-	98	7	18	9	28	1	50	6	529
Open-Water	154	15	200	11	239	6	162	1	201	2	277	3	245	10	262	4	1792
Disko Bay	91	6	84	5	63	1	70	11	74	6	44	-	120	-	158	4	737
Hunting Districts	25	43	20	36	25	18	4	25	17	20	24	14	25	10	24	26	356
TOTAL:	326	74	375	61	432	32	290	37	390	35	363	26	418	21	494	40	3414

Source: *Grønland . . . Årsberetning* (1968, 1969-1970, 1971-1972, 1973), Ministeriet For Grønland.

* Towns and Villages

APPENDIX V

TOTAL PLANNED AND COMPLETED RESIDENTIAL UNITS

Total Planned and Completed Residential Units

Total Planned*			Total Completed**		
Year	Towns	Villages	Year	Towns	Villages
1966	382	56	1966	377	61
1967	346	20	1967	432	32
1968	360	51	1968	292	46
1969	464	74	1969	390	35
1970	277	92	1970	363	26
TOTAL:	1829	293	TOTAL:	1854	200

* Grønlandsrådet, *Udkast til investeringsplan for 1966-1970* (Dok nr. 30), 1 januar 1966, p. 45.

** *Grønland . . . Årsberetning*, 1969-1970, p. 119; 1971-1972, p. 146, Ministeriet for Grønland.

APPENDIX VI

NET INTER-COMMUNAL MIGRATIONS— 'OPEN-WATER' COMMUNES, 1953-1972

Net Inter-communal Migrations — 'Open-Water Communes, 1953-1972
(persons born in Greenland)

From Commune/ To	1953				1954				1955				1956				1957				1958				1959				1960				1961				1962			
	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H
Nanortalik	5	4		*1*	1	*3*		*1*	1	*3*	*1*	1		4	1	*8*	4	21	*4*	1	*1*	*10*	8	*1*	1	15	*6*	*2*	*3*	5	*8*	*9*	*8*	32	*2*		1	4	1	7
Julianehåb	2	1		*5*	9	20	*1*		2	*19*		*3*	*1*		*9*	2	3	*7*	*1*	8	11	25		*7*	*11*	4	1	*2*	*1*	14	*3*	1	*12*	*14*			*5*	16	2	2
Narssak	2	2		*2*	7	14			*7*	*9*			1	7	5	*1*	*1*	10			*2*	*2*	*5*	*4*	*1*	3		1	1	*16*	*2*	*3*	*13*	*5*			7	25	*1*	5
Ivigtut	*14*	*1*			*3*	1		*1*					*3*	3	2		*3*		*2*							3			2		*2*		4	*1*		1	*5*		1	1
Frederikshåb		*4*	*1*			13		*1*	*20*	14	*1*	*20*		20		2		7	*1*	*5*		*21*	2	3		14	1	3		6	*6*	8		*13*	6	*4*		35	5	2
Godthåb	5		*7*	*13*	*14*		*47*	*54*	*20*		9		1		*65*	*21*	1		55	66	23		7	11	*25*	2	1		*7*		*5*	*16*	8		*24*	*11*	9		15	*3*
Sukkertoppen	5			*3*		50		3	1	*13*		*7*	1	60		*60*	2	*61*		40	*4*	*6*		4	4	7		*11*	4	7		*13*	*6*	23		24	*4*	*10*		
Holsteinsborg		*17*	10		1	45	10		*4*	7	11		*1*	49	43		6	*65*	*31*			*12*	*12*		*9*	4	14		8	15	15		5	7	*23*		*1*	7	4	
Egedesminde	2	29	2	4		66		*11*	1	*15*	2	3		37	*1*	11	3	9	2	1	*3*	*4*	*1*	*13*		17	9	*10*	6	18	*10*	13	*2*	9	5	*21*	*5*	59	*6*	47
Godhavn		*1*		1		7	4	1		10		*2*				1		*1*	3		3	6	*6*	*1*	*5*	16		4	*1*	*2*	3	3		5	*3*	*1*	*3*	5		
Vaigat		*1*	3	*1*		15		5		*3*	4			12	1	1		*13*	*3*			2	1	*4*		4	*2*	*7*		3	*7*	*7*	*3*	5	3	5	4	6		
Christianshåb																																								
Jakobshavn		*3*	*1*	*1*		7	1			34	1		13		3	9	*6*	12	9	8		9	*5*	1	*1*	5	3	5	1		*3*			*12*	5	9	2	8	*14*	3
Umanak	1	*9*		2	*1*	30		*2*		2		2		*11*	1	4			2		*5*	*6*	*1*				5		3	*2*	2	1	*5*	16	5	*3*	6	*3*	17	11
Upernavik		11	10	2		23	*1*	8	7	*4*	1	12		15	2	20		*17*	*1*	1	1	2	2	1	7	2	*10*	2		3	1	1	*2*	8	2	*2*	*2*	3	8	*7*
Thule			*1*	3						10				14	*4*			*9*		*1*		2		2	2	2			*1*				*5*	*5*		1		3		*4*
Angmagssalik		*1*				*8*	*4*	1		*4*	4			7	7	*5*	*6*	*5*	1	6		2			1	1	*3*	*9*	5	6	1		3	1		2		2		*6*
Scoresbysund		1						2								*1*			8			*2*		*1*					1		6		1			*8*	*3*			
In-migration total	18	54	25	12	18	294	15	20	16	82	32	18	16	228	65	51	19	59	78	131	38	46	20	22	11	96	37	30	30	80	22	42	20	107	26	42	29	173	53	78
Out-migration total	*14*	*36*	*10*	*26*	*18*	*8*	*52*	*70*	*31*	*70*	*2*	*32*	*5*	*11*	*79*	*95*	*16*	*178*	*46*	*6*	*17*	*65*	*30*	*30*	*56*		*21*	*41*	*14*	*20*	*45*	*39*	*56*	*49*	*50*	*42*	*33*	*16*	*21*	*20*
Total In-migration		109				347				145				360				287				126				174				174				195				333		
Total Out-migration		*86*				*148*				*135*				*190*				*245*				*142*				*118*				*118*				*197*				*90*		

	1963				1964				1965				1966				1967				1968				1969				1970				1971				1972			
	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H

Upernavik			11	10	2			25	2	8	3	4	1	12		15	2	20		17	1	1	1	2	2	1	7	2	10	2		3	1	1	2	8	2	2		2	3	8	7
Thule				1	3							10				14	4			9		1		2		2	2	2			1				5	5		1		3		4
Angmagssalik			1						6	4	1		4	4		7	7	6	6	5	1	6		2			1	1	3	3	5	6	1		3	1		2		2		6
Scoresbysund			1								2							1			8			2		4					1		6		1			8	3			
In-migration total	18	54	25	12		18	294	15	20		16	82	32	18		16	228	65	51		19	59	78	131		38	46	20	22		11	96	37	30		30	80	22	42		20	107	26	42		29	173	53	78
Out-migration total	14	36	10	26		18	8	52	70		31	70	2	32		5	11	79	95		16	178	45	6		17	65	30	30		56		21	41		14	20	45	39		56	49	50	42		33	16	21	20
Total In-migration			109					347					145					360				287				126					174					174					195					333		
Total Out-migration			86					148					135					190				245				142					118					118					197					90		

	1963				1964				1965				1966				1967				1968				1969				1970				1971				1972			
	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H	F	G	S	H
Nanortalik	6	12		3	4	6	1	7	6	31	2	6	7	30	6	3	4	4		9	1	10	3	10	1	11	3		10	3	7	3	2	8	2	3	3	10	4	2
Julianehåb	20	13	13	9	9	14	8	2	8	16	17	4	9	11	2	17	1	2	4	10	7	14		2	7	3	8	4	5	10	11	2	8	1	12	20	6	4	7	1
Narssak	1	11	2	4	2	9	3	9	6	7	6	5	2	7	7	2	6	5		3	10	11	4	6	3	12	1	5	3	12		2	3	5	4	8	4	1	3	1
Ivigtut	4						1		6	1	1		2	1	1	2	2	4			7	1			5				4		1	1		1	1	1	5	1	1	
Frederikshåb		26	2	1		29	3	5		5	2	1		1	3	11		11	9	7		9	24	15		15	1	3		16	2	4		8	11	2		17	2	14
Godthåb	25		38	4	25		23	16	3		13	34	5		22	1	14			9	9		27	5	11		6	23	16		50	14	5		12	44	7		14	43
Sukkertoppen	2	39		1	4	20		16	1	8		6	1	15		8	11	3		25		53		23	3	8		10	2	49		2	11	9		10	4	9		1
Holsteinsborg	1	4	1		4	12	19		2	27	6		12	2	4		7	2	14		13	8	12		4	27	10		4	12	4		2	47	8		15	31	2	
Egedesminde	2	67	13	55	8	88		10	2	17	16	18	7	6	10	50	10	17	14	45	3	9	27	25	14	12	6	8	1	48	33	24	14	15	13	33	10	31	20	45
Godhavn		7	1	1		9	3	2	1	12	1	2	1	11	13	1	2	9	1	1	3	1	5	1		8	9	5	1	6	1	11	1	4		3	1	6	9	8
Vaigat	2	3	6	4	1	1	8	4	4	10	1	8	28	27	7	19	15	25	15	2	6	20	14	8	25	14	13	1	46	55	1	46	36	63	6	15	14	33	11	123
Christianshåb	6	7	7	5	1	4	1	2	1	1	13	9	1	2	4	3		3	1		6	2	4	5	2	14	1	8	2	12	3	3	4	18	2	2		7	5	5
Jakobshavn	2	10	4	1			3	9	2	14		9	24	13		11	5	9	1		13	1	6	4	4	12	6	1	8	1	7	4	3	22	1	25	6	6	11	21
Umanak		18	1	1	1	6	2		1	11		8	1	3	2	4	1		4	1	5	4	6	8	3	27	4	10	3	13	3	4	9	16	8	10	4	9	10	3
Upernavik	3	3	4	2	1	10	6	8	8	10	12	9	6	2		11		15	2	8	8	11	5	3	17	11	16	7	2	9	6	4	3	13	3	9	12	15	4	1
Thule	5	9	1	1		2	4	1	7	3	1	6	4	11			2	2	1		2	2	2	4		2	3		3	1	2	3	1	3	5	2	9	3	3	1
Angmagssalik	1	7		4	1	11	8	6	2	2	3	1	1	57	7	17	2	20	1	4	2	10	12	11	1	41	2	6	2	11	4	4		10	9	3	4	4	3	2
Scoresbysund	7					4			6	1			7	1		1		1	3		2	1	3	9	1		3	11	1	1		1		2		1	7	7	3	
In-migration total	15	207	19	73	25	194	66	54	30	140	60	47	83	163	56	127	57	100	41	102	55	142	53	90	77	195	63	53	105	217	69	97	58	215	68	67	69	112	55	221
Out-migration total	72	29	74	23	36	33	29	48	36	36	42	70	45	39	41	34	25	39	33	22	68	35	131	55	24	22	29	58	8	42	66	35	50	30	29	124	42	73	57	57
Total In-migration			314				339				277				429				300				340				388				488				408				457		
Total Out-migration			198				146				184				159				119				289				133				151				233				229		

Source: Ministeriet For Grønland, "Mandtalslisterne."

APPENDIX VII

Examples of Activities Within the Major Employment Sectors

Examples of activities within the major employment sectors*:

Mining:	coal and stone quarrying cryolite quarrying
Manufacturing:	fish processing baking shoe repairing/shoe making printing and binding auto repairing ships (boats) machine tooling
Construction:	general contracting brick laying carpentring painting plumbing
Public Works:	sanitation water supply electrical installing
Trade and Sales:	delicatessen grocery confectionery dry goods radio, phonograph, televsion Royal Greenland Trade
Transportation:	taxis stevedoring shipping postal services television and radio services warehousing
Services:	government schools churches hospitals medical practitioners, dentists, midwives social workers restaurants hotels household help
Fishing:	fishing
Hunting:	hunting

**Danmarks Statistik*

APPENDIX VIII

INDHANDLING AND UDHANDLING—THE 'OPEN-WATER' REGION, BY TYPE OF CENTRE

Indhandling and *Udhandling*—The 'Open-Water' Region, by Type of Centre

(1,000 kr.)

Centre		1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
"B" Centres																
Arsuk	Indhandling	211	248	253	411	379	272	681	349	532	507	203	559	-	-	-
	Udhandling	607	566	715	930	704	825	1055	967	1144	1579	1603	1715	-	-	-
Fiskenæsset	Ind.	187	145	156	249	328	342	-	685	882	932	616	1663	-	-	-
	Ud.	403	460	581	607	592	732	1083	1165	1479	1521	1482	1879	-	-	-
Kapisigdlit	Ind.	546	498	305	255	283	195	157	174	197	173	121	124	-	-	-
	Ud.	497	393	538	655	576	560	559	630	722	839	807	726	-	-	-
Qornok	Ind.	258	250	234	217	234	205	150	156	190	107	72	47	-	-	-
	Ud.	370	377	349	583	488	486	465	476	513	429	371	348	-	-	-
Kangamiut	Ind.	344	463	474	539	584	343	1475	547	690	576	278	419	-	-	-
	Ud.	737	865	947	1238	1071	1040	1609	1963	2252	2289	2102	2121	-	-	-
Itivdlek	Ind.	121	150	190	221	300	102	195	99	195	177	72	162	-	-	-
	Ud.	295	334	345	504	458	362	383	400	472	542	446	525	-	-	-
"C" Centres																
Narssalik	Ind.	115	116	116	171	190	89	81	155	102	130	45	98	-	-	-
	Ud.	205	306	214	352	330	252	317	350	350	341	255	256	-	-	-
Avigat	Ind.	161	160	112	174	120	115	98	95	117	53	60	45	-	-	-
	Ud.	176	199	156	337	192	213	325	375	323	308	297	270	-	-	-
Kangek	Ind.	85	95	94	119	101	22	11	13	32	47	43	19	-	-	-
	Ud.	175	208	195	381	254	232	252	296	328	378	340	303	-	-	-
Atangmik	Ind.	127	118	93	108	125	110	228	240	305	167	162	256	-	-	-
	Ud.	274	303	300	407	376	373	482	642	813	704	694	815	-	-	-
Napassok	Ind.	149	153	316	305	320	204	558	-	-	1077	545	727	-	-	-
	Ud.	279	321	540	685	539	560	688	860	1039	1013	976	1117	-	-	-
Sarfanguak	Ind.	125	144	122	161	186	76	289	177	274	182	136	156	-	-	-
	Ud.	238	287	275	368	326	258	345	356	436	438	408	448	-	-	-
Avssaqutak	Ind.	75	73	68	74	63	39	78	73	76	77	30	33	-	-	-
	Ud.	134	121	123	183	181	139	161	183	160	144	111	113	-	-	-
Towns																
Frederikshåb	Ind.	-	-	-	-	-	1.467	1.348	913	1.235	1.396	1.201	1.720	4.300	6.214	9.492
	Ud.	-	-	-	-	-	6.190	5.875	8.988	9.488	11.466	11.915	12.942	15.181	18.279	19.233
Godthåb	Ind.	-	-	-	-	-	103	54	66	41	4.456	3.475	-	4.684	7.156	11.494
	Ud.	-	-	-	-	-	17.703	23.022	25.566	27.494	30.775	35.271	34.090	32.110	37.744	41.736
Sukkertoppen	Ind.	-	-	-	-	-	1.365	3.665	2.809	3.486	3.863	1.541	3.237	3.954	5.864	7.831
	Ud.	-	-	-	-	-	8.320	10.127	12.477	11.415	14.844	16.390	16.816	15.929	17.874	20.951
Holsteinsborg	Ind.	-	-	-	-	-	370	1.399	1.585	2.598	2.321	1.331	2.009	3.105	3.345	3.761
	Ud.	-	-	-	-	-	9.406	10.786	14.668	14.870	16.345	15.894	17.167	16.910	16.782	20.825

\- no data available

Source: — Den Kongelige Grønlandske Handel, Økonomiafdelingen, *Rentabilitetsanalyser og Specifikationer til Regnskabet* (1963-1972).
— Ministeriet For Grønland, "Råvaretilgang M. V. ved Fiskerianlæg i Grønland . . . . . "
Meddelelser Fra Økonomisk-Statistisk Kontor (nrs. 18, 23, and 34).
— Grønlandsrådet, *Udviklingen i Fiskerbygderne* (Dok. nr. 28), 2 June 1970 (see 'Bilag 3a').

APPENDIX IX

TYPES OF PUBLIC INVESTMENT

Types of Public Investment

DPA	EOC	SOC
Industrial plants	Service facilities	Elementary schools
Other installations	Harbours for fishing boats	Vocational schools
Fishing boats	Electrical installations	Libraries
	Road, water sewage	Health and Welfare
	Docks and wharfs	Churches
	Telecommunications	Administration
	Internal air transportation	Judicial
	Coastal boat traffic	Social institutes
	Harbour facilities	Fire protection
	Postal facilities	Hotels
	Storage tanks	Youth hostels
	Warehouses	Police protection
	Central heating plant	
	Workshops and general contractors' storage yards	

DPA — Directly Productive Activities

EOC — Economic Overhead Capital

SOC — Social Overhead Capital

APPENDIX X

Investments in 'Open-Water' Towns, 1951-1972

Investments in 'Open-Water' Towns, 1951-1972

(1,000 kr.)

Year	Frederikshåb			Godthåb			Sukkertoppen			Holsteinsborg		
	DPA	EOC	SOC	DPA	EOC	SOC	DPA	EOC	SOC	DPA	EOC	SOC
1951	-	397	91	-	1,281	53	-	1,147	-	-	632	13
1952	4	636	108	-	1,972	1,940	-	879	-	-	1,303	376
1953	-	682	21	-	2,474	6,551	263	600	-	-	1,236	273
1954	465	368	9	-	3,161	6,968	640	930	129	-	1,258	1,242
1955	10	118	7	51	2,927	950	238	1,343	182	32	2,352	2,924
1956	-	306	57	-	948	1,628	28	738	4	-	1,304	2,616
1957	-	89	516	-	738	3,315	23	142	23	1,517	248	528
1958	12	40	273	-	1,141	2,118	130	695	1,001	299	337	289
1959	220	462	100	-	543	3,392	523	1,436	263	252	1,062	67
1960	97	1,100	16	7	468	1,556	766	2,916	937	-	452	-
1961	10	2,256	-	4	3,959	3,537	380	2,299	362	20	246	-
1962	30	6,788	301	5,287	3,797	3,943	570	2,813	72	21	333	72
1963	-	5,575	47	5,609	9,453	1,569	1,620	2,784	1,869	2,329	778	31
1964	-	3,760	172	2,916	11,840	1,577	190	4,125	786	2,282	3,104	842
1965	909	2,835	585	265	12,912	1,747	68	6,472	740	-	2,297	537
1966	3,579	10,161	215	22	17,864	7,028	141	7,370	47	266	4,347	469
1967	1,572	11,086	909	275	14,081	10,517	-	7,047	64	125	7,319	1,366
1968	41	5,795	4,218	1,711	20,141	27,895	-	15,966	1,164	101	11,398	5,989
1969	141	7,386	7,407	-	24,719	32,406	975	12,480	2,893	-	17,714	3,993
1970	7,598	6,973	6,013	-	23,063	18,314	710	10,883	4,903	177	15,703	2,295
1971	4,952	9,155	5,525	-	22,889	9,188	9,831	11,602	7,743	257	8,281	1,514
1972	207	5,856	3,209	-	34,354	10,135	6,717	8,828	6,229	862	6,698	10,001
TOTAL:	19,847	81,824	29,799	16,147	214,724	156,327	23,813	103,495	29,548	8,540	88,404	35,437

DPA — Directly Productive Investment
EOC — Economic Overhead Capital
SOC — Social Overhead Capital

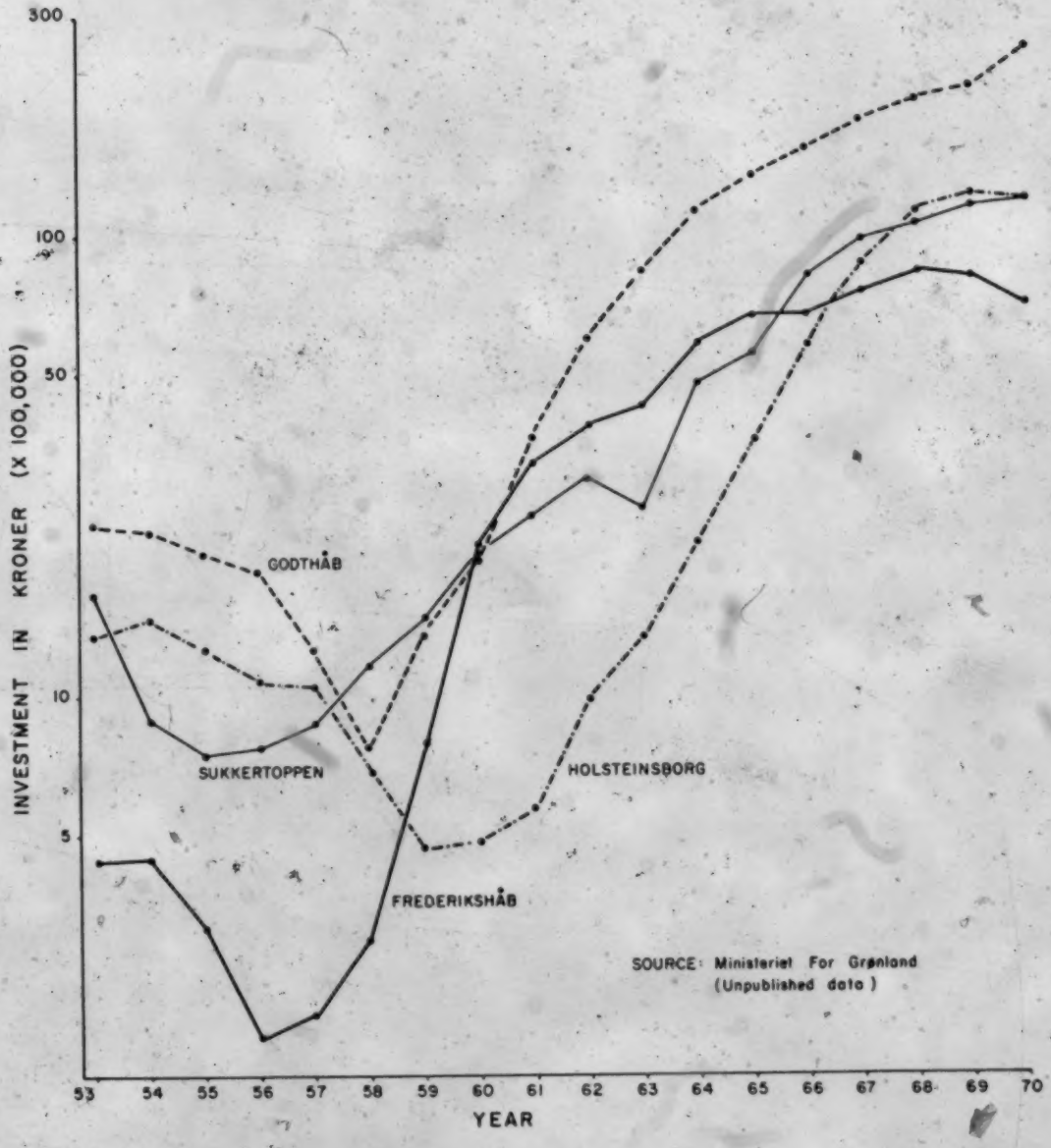
Source: Ministeriet For Grønland. "Regnskabsanalyser" (1951-1972). (Økonomisk/Statistisk Kontor.) København.

APPENDIX XI

Five-Year Moving Average of Investments in Economic Overhead Capital, 1951-1972

Appendix XI.

FIVE-YEAR MOVING AVERAGE OF INVESTMENTS IN ECONOMIC OVERHEAD CAPITAL, 1951 - 1972



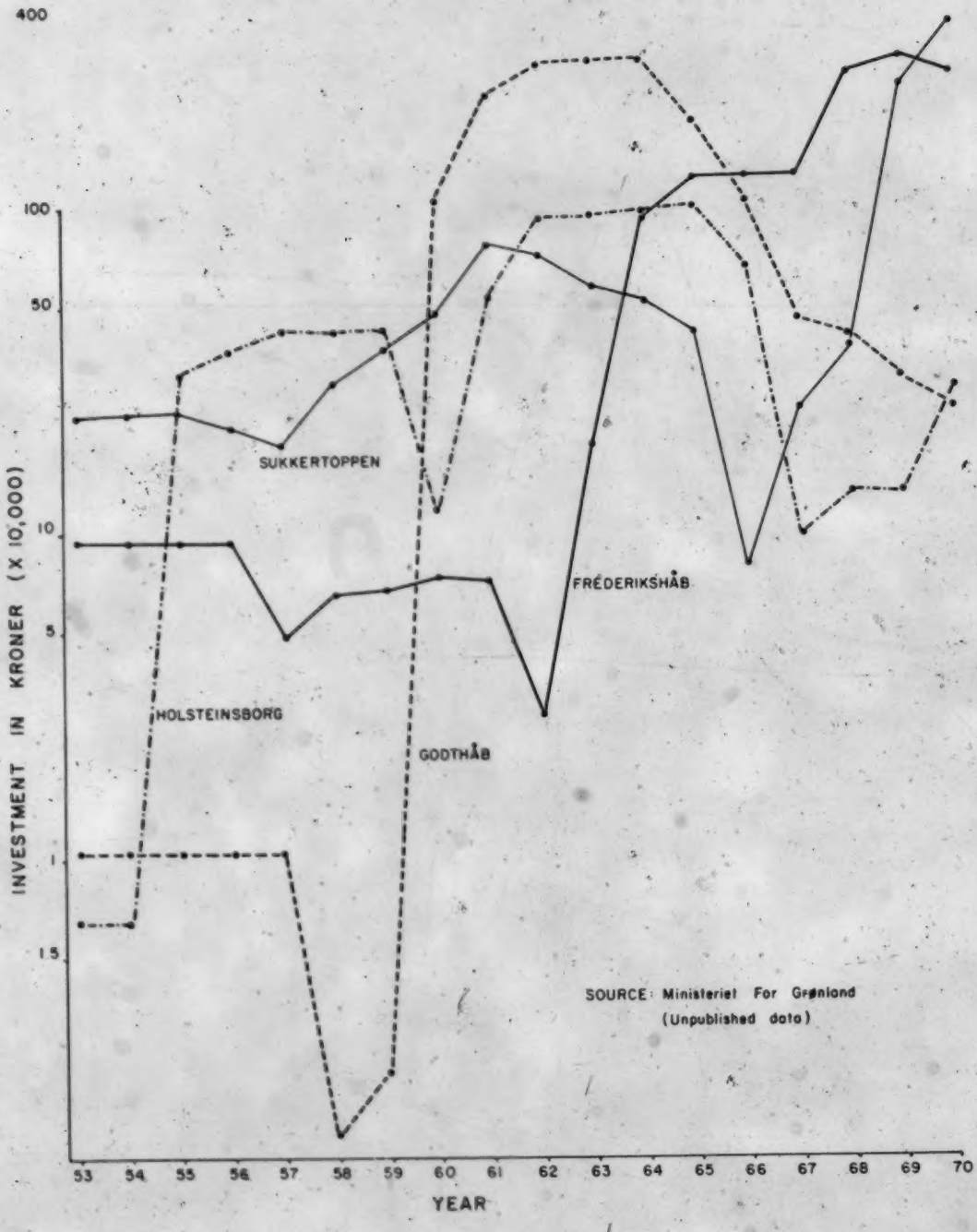
SOURCE: Ministeriet For Grønland (Unpublished data)

APPENDIX XII

Five-Year Moving Average of Investments in Direct Productive Activities, 1951-1972

Appendix XII

FIVE-YEAR MOVING AVERAGE OF INVESTMENTS IN DIRECT PRODUCTIVE ACTIVITIES, 1951-1972



SOURCE: Ministeriet For Grønland
(Unpublished data)

APPENDIX XIII

GLOSSARY OF DANISH/GREENLANDIC WORDS

Glossary of Danish/Greenlandic Words

Boligstøtte — subsidy on housing construction

boplads(er) — formerly a settlement. Very few people, but no fixed upper limit on population size. No retail sales outlet nor processing facilities.

butik(ker) — a retail sales outlet

by(er) — a town; *bygd(er)* — a village

btgd(er) — present-day designation for a settlement

Fanger(e) — a seal hunter

Fhekdjast — a katabatic wind similar to the chinook or föhn

hvile-i-sig-selv — pay-as-you-go; self-supporting

indhandling — trading-in of raw materials

KGH — The Royal Greenlandic Trade Department

krone(r) — the present-day monetary unit in Denmark

nunatak(ker) — a non-glaciated mountain top

rigsdaler(e) — formerly the Danish monetary unit. Two kroner were equal to one rigslader.

Storis — Pack ice originating in the Arctic Ocean and driven by long shore currents around the southern tip of Greenland to the West coast.

Store Kommissionens Betænkning af 1948-1950 — The Greenland Commission of 1948. Often referred to as the "Great Commission" because of its comprehensive report and recommendations for making Greenland an integral part of the Danish realm.

"Ud på bankene!" — "Out to the banks!" An oft heard comment by many in Greenland in the 1950s—economic success depended on exploiting the rich off-shore fishing banks.

udhandling — retail sales to Greenlanders

udsted(er) — formerly a village

umanak(ker) — a heart-shaped mountain

umiak — originally a large open boat used in whaling; later used for undertaking long trips with the rowing done by women.

Note: The suffixes in parenthesis represent the plural form.